Reducing Extremely Challenging Behaviors and Improving Quality of Life:

Six Teaching-Family Studies

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Reducing Extremely Challenging Behaviors and Improving Quality of Life:

Six Teaching-Family Studies

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ABSTRACT

Six Teaching-Family studies are presented. The studies address limitations in prior Teaching-Family research. Single subject methodologies were employed in the conduct of all studies. The six studies explored the effects of Teaching-Family procedures on: 1) The injurious aggression of three violent juvenile offenders living in a group home, 2) the aggression and quality of life of two adults with intellectual disabilities participating in an independent living program, 3) the elopement of an adult with intellectual disabilities, 4) the skill acquisition of an adult with intellectual disabilities with a history of aggression and elopement, 5) the aberrant behavior displayed by a pre-school child, and, the effects of providing the child's mother with a daily teacher report on teacher facilitation of procedures designed to facilitate child engagement and 6) the injurious aggression of five children attending an inclusive early education center. All six of the studies document use of Teaching-Family procedures in combination with functional behavioral assessment. Five of the studies form a nucleus of research suggesting that use of Teaching-Family procedures may reduce extremely challenging behaviors including injurious aggression, elopement, pica, and arm flailing. Two of the six studies document improvements in quality of life. These two studies extend prior Teaching-Family research by documenting improvements in quality of life for two new populations, adults with intellectual disabilities and young children. Maintenance data based are presented for all six studies.

Key Words: Teaching-Family; adaptation; aggression; elopement; aberrant behavior; quality-of-life; treatment fidelity, maintenance; sustainability.

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Dedication

Good things come in threes. Therefore, my dedication is threefold.

This work is dedicated to my family, Elisabethe`, my ChicaBella, Dante, Charlie, Bart and Alexis who were with me through this adventure. Thank you Elizabeth for sharing your ideas, for your humour, for your superb insights, for listening to me and for your emotional support. Thank you for the many sacrifices you have made for me. You are the best person I know and I love you. While the journey has been long, I look forward to what is coming next…

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Introduction:

Overview of Teaching-Family Procedures, Research and Purpose of Current Studies

Teaching-Family procedures have been internationally disseminated to promote quality living for children, adults and their families (Teaching-Family Association, 2008). Between 1967 and 2005, an estimated 10,000 Teaching-Family professionals served over 85,000 individuals and families (Risley, 2005). Teaching-Family researchers were pioneers in the development of evidence-based interventions (Fixsen & Blasé, 1993; Fixsen, Blasé, Timbers, & Wolf, 2001; Phillips, 1968; Wolf, Kirigin, Fixsen, Blasé, & Braukmann, 1995), community based family-style treatment environments (Bailey, Wolf, & Phillips, 1970; Brendtro,1990; Fixsen, Phillips, & Wolf, 1972), design of interventions that facilitate self-determination (Fixsen, Phillips, & Wolf, 1973; Fixsen, Phillips, & Wolf, 1972; Phillips, Phillips, Wolf, & Fixsen, 1973), development of parent training procedures (Dancer et al., 1978) and the use of social validation assessment to inform program revision and assure quality control (Braukmann, Fixsen, Phillips, & Wolf, 1975; Connis et al., 1979; Kirigin, 2001; Minken et al., 1976; Wolf, 1978).

Teaching-Family professionals use a person-centered cognitive-behavioral approach to treatment designed to promote the acquisition of pro-social, academic and self-help skills. The standard components and elements of the Teaching Model appear in Table A below.

Table A: Standard Components and Elements of Teaching-Family Programs

Components	Elements	Yes or No
Community-Based	Access to local schools, recreation etc.	Yes
Self-Determination Daily	Meeting	Yes
	Structured Peer Feedback	Yes
Making	Choices	Yes
Relationship Development	Group Activities	Yes
	Time w/preferred persons	Yes
Individual	time w/staff	Yes
Service Continuum	Universal: schools	Yes
	Specialized: General T-F Curriculum	Yes
	Individualized T-F Curriculum	Yes
Individualized	education, quality of life or other plan	Yes
Skill Acquisition and Teaching Procedures	1,2, 3 Skills Assessment	Yes
Motivation	System	Yes
Pre-Teach	ing	Yes
Preventa	tive Prompting	Yes
Effective	Praise	Yes
Teaching	Interactions	Yes
	Seven Phases of Skill Acquisition	Yes
Verbal	De-escalation	Yes
Problem	Solving	Yes
Body	Basics	Yes
Professional Development	Off-site pre-service workshops	Yes
	Off-site in-service workshops	Yes
On-site	training	Yes
Consultation		Yes
Teaching-Fam	ily Certification	Yes

Research has shown that use of Teaching-Family procedures increased youth problem solving skills (Kifer, Lewis, Green, & Phillips, 1974) conversation skills (Minken et al., 1976), classroom skills (e.g. Weinrott, Jones, & Howard, 1982) and daily living skills (e.g. Liberman, Ferris, Salgado, & Saldagado, 1975). In addition, professionals have used Teaching-Family procedures with persons with intellectual disabilities to increase social skills (Schneider, Kinlow, Galloway, & Ferrow, 1982; Krantz, Ramsland, & Mc Clannahan, 1989) and increase safety skills (Bannerman, Sheldon, & Sherman, 1991).

In regard to problem behavior, research suggests that programs using Teaching-Family procedures may produce greater reductions in juvenile recidivism than comparison programs (e.g., Kirigin, Atwater, Braukmann, & Wolf, 1982), result in more successful subsequent placements compared to other programs (e.g., Lee & Thompson, 2008), reduce care-giver perceptions of youth problem behavior (e.g., Lewis, 2004), reduce youth non-compliance (Field, Nash, Hadwerk, & Friman, 2004a) and reduce verbal aggression (Phillips, 1968). Teaching-Family procedures proved effective for reducing the disruptive behavior of an adult with intellectual disabilities (Reese, Sherman, & Sheldon, 1998).

The Teaching-Family literature has limitations. A major limitation of Teaching-Family research is that there appears to be little evidence to support the use of Teaching-Family procedures to reduce extremely challenging behavior. Kumpfer (1999) noted that while there was a wealth of evidence to support the use of Teaching-Family procedures with “pre-delinquents,” an evidence base documenting

effective use with juveniles who displayed serious problem behaviors had not yet been established. More recently, Scott and Lorenc (2007) documented reductions in the severity of offenses for which juveniles were adjudicated. While the Scott and Lorenc (2007) study is an important step forward, additional Teaching-Family research documenting reductions in extremely challenging behaviors appears to be warranted.

A second limitation of Teaching-Family procedures is that there has been almost no documentation of the use the procedures in combination with functional behavior assessment. The Individuals with Disabilities Education Act of 1997 mandated the use of functional assessment (or analysis) during the development of behavioral interventions for persons with identified needs. Field, Nash, Handwerk, & Friman (2004b) used Teaching-Family procedures in combination with functional behavioral assessment to reduce the non-compliance of a group home youth. The study showed that Teaching-Family technologies are compatible with the use of functional behavioral assessment (FBA). Such compatibility means that service providers might use Teaching-Family technologies to teach skills identified through FBA that are included in individualized-education, positive behavioral-support, quality of life and person centered plans. Teaching-Family researchers have not yet documented use of Teaching-Family procedures as part of these plans. Documentation of the use of Teaching-Family procedures in combination with individualized-education and other plans would extend the generality of the model.

While there is a firm evidence base to support the use of Teaching-Family procedures for use with court adjudicated youth living in group homes, the evidence-base supporting use of the procedures with additional populations is less certain. A few studies examined the effects of Teaching-Family procedures on the behavior of young children (McGee, Krantz, Mason, & McClannahan, 1983; Ruma, Burke, & Thompson, 1996). As noted above, there is an emerging base of Teaching-Family studies involving persons with intellectual disabilities (e.g. Bannerman, Sheldon, & Sherman, 199; Reese, Sherman, & Sheldon, 1998). More research is needed however, in order to broaden the evidence-base supporting the use of Teaching-Family procedures with young children and persons with intellectual disabilities.

The use of social validation procedures by Teaching-Family professionals contributes to quality services (e.g., Braukmann, Fixsen, Phillips, & Wolf 1975; Wolf, 1978). However, it is curious that only one study, Gilman & Handwerk (2001), appears to have documented improvements in life satisfaction following participation in Teaching-Family procedures. Given that the mission of the Teaching-Family Association is to promote quality living, reports of improved quality of life for participants appear to be needed in order to document that the association is accomplishing its mission.

There is modest evidence to suggest that Teaching-Family outcomes maintain over time. Additional evidence of the maintenance of outcomes might bolster confidence that Teaching-Family procedures produce enduring outcomes.

Finally, it is clear that Teaching-Family procedures are replicable as evidence by widespread dissemination. However, Teaching-Family research appearing in peer reviewed journals has typically not included detail regarding precisely which Teaching-Family procedures were used. The technological specificity of many of these articles is insufficient for replication by Teaching-Family researchers or others. Enhanced specification of procedures including any adaptations particular to a given setting might assist future researchers in their replication and program development efforts.

The purpose of the current series of studies is to address the limitations in Teaching-Family research noted above. When added to the Scott and Lorenc (2007) study, five of the studies appearing in this dissertation form a nucleus of research documenting reductions in extremely challenging behaviors following the use of Teaching-Family procedures. All six studies appearing in this dissertation document use of Teaching-Family procedures in combination with functional behavior assessment. Five of the studies broaden the evidence base supporting use of Teaching-Family procedures with people with intellectual disabilities and young children. When added to a prior study (Gilman & Handwerk, 2001) two studies form an emerging evidence-base that suggests Teaching-Family procedures may produce improvements in quality of life for participants. All six studies provide evidence of the maintenance of outcomes thus bolstering confidence that Teaching-Family procedures produce enduring outcomes. Finally, tables indicating precisely which

Teaching-Family Components and Elements were used in each setting are provided which may prove useful to future researchers in their program development efforts.

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Chapter 1

Addressing the Injurious Aggression of Three Violent Juvenile Offenders: A pilot study

Youth violence has been a major public health issue since the mid 1980s (Bailey, 2002; Caldwell, Vitacco, & Rybroek, 2006). Researchers have commented on the difficulties of developing effective interventions to reduce youth violence (Polaschek, Wilson, Townsend, & Daly, 2005) and have emphasized the need for effective community-based programs (Leschied & Cunningham, 1998; Redding, 2006).

Researchers have asserted that individualizing treatment may enhance results (Heide, & Solomon, 2003; Mcguire, & Hatcher, 2001) particularly if the treatments are based on the results of functional behavioral assessment (Getting, & Stoiber, 2006; Peterson, Larson, & Skiba, 2001).

Teaching-Family procedures may be effective for reducing youth violence. An early Teaching-Family study demonstrated that the procedures effectively reduced the verbal aggression displayed by pre-delinquent youth living in a group home (Phillips, 1968). Kirigin, Braukmann, Atwater, and Wolf (1982) reported that Teaching-Family youth who had participated in twelve replications of the model had reduced rates of recidivism compared to youth served in comparison programs. Aggression was an initial referral factor for several of the youth. Kirigin et al. served as the basis for

later reviewers' conclusions that Teaching-Family procedures are effective for delinquency prevention and rehabilitation (e.g., Kumpfer, 1999; Lipsey, 1999).

More recently, Field, Nash, Handwerk, and Friman (2004a) reported that Teaching-Family procedures effectively reduced the aggression of three youth served at Girls and Boys Town. In a separate research, Field, Nash, Handwerk, and Friman (2004b) used Teaching-Family procedures to reduce instances of crisis teaching episodes in response to severe behaviors (including aggression) displayed by a group home youth. Scott and Lorence (2007) reported reductions in the severity of crimes for which youth were adjudicated following participation in Teaching-Family programs. Taken together these studies suggest the possibility that use of Teaching-Family procedures may reduce injurious aggression displayed by repeat violent juvenile offenders living in a group home.

The purpose of the current pilot study was to explore the effects of using functional behavioral assessment in conjunction with Teaching-Family procedures on the number of aggression-related injury reports filed by teachers.

Method

Setting: The setting was a community-based Teaching-Family group-home for court adjudicated youth. The home was located in a small city on the Great Plains. Eight youth lived in the home at any given time. Typically, about 18 youth were served in the home over the course of one year with an average stay of about 7 months.

Participants: Three repeat violent juvenile offenders participated in the pilot study. Youth have been given fictitious names to protect their identity.

Aramis was a 16 year old gang member previously adjudicated for three separate violent offenses. The offenses involved assaulting a high school coach with a football helmet, stabbing another high school student and shooting a rival gang member in the stomach with a .380 caliber pistol. The group home staff contacted the research team for assistance in developing a plan to reduce Aramis' aggression in the group home.

Barrett was a 17 year old youth previously adjudicated for two separate violent offences. Barrett had struck another high school student in the face with a hand-spike puncturing the student's cheek and knocking out two teeth. Barrett's second violent offense was using a baseball bat to fracture his mother's boyfriend's skull, left arm, ribs and thighbone. The group home staff contacted the research team for assistance in developing a plan to reduce Barrett's aggression.

Tomas was a 17 year old violent offender who had been adjudicated for assaulting his grandfather. Tomas' second violent offense was assaulting a police officer. The police officer was responding to a complaint involving Tomas. The group home staff contacted the research team for assistance in developing a plan to reduce Tomas' aggression.

Measures: The primary dependent measure was the number of aggression-related injury reports involving each of the three participants each week. The reports and accompanying documentation were similar to those used in related studies

(Bjorkdahl, Heilig, Palmstierna, & Hansebo, 2007; Omerov, Edman & Wisted, 2002). Injury reports contained information such as the location and description of the injury, the type(s) of medical treatment given, the time of day, the persons involved and the circumstances under which the injury occurred. Teachers determined an injury to be aggression-related if the student had done any of the following to another person: hitting, kicking, biting, shoving, elbowing, wrestling, or other forceful contact (detailed by the staff member completing the report). Each injury report was signed by an additional staff witness.

A secondary measure was the number of times youth were adjudicated for any offence prior to living in the group home and following their completion of the program.

Procedures: Functional behavioral assessment was added to standard Teaching-Family Components and Elements. Table B details the Components and Elements present in the current study. Additional details follow.

Table B: Procedures for Juvenile Offenders living in Teaching-Family Group Home

Elements Com	ponents	Present
Community-Based	Access to local schools, recreation etc.	Yes
Self-Determination Daily	Meeting	Yes
	Structured Peer Feedback	Yes
Making	Choices	Yes
Relationship Development	Group Activities	Yes
	Time w/preferred persons	Yes
Individual	time w/staff	Yes
Service Continuum	Universal: schools	Yes
	Specialized: General T-F Curriculum	Yes
	Individualized: Indiv. T-F Curriculum	Yes
	Individualized Education Plan	
Skill Acquisition and Teaching Procedures	1,2, 3 Skills Assessment	Yes
Motivation	System	Yes
Pre-Teach	ing	Yes
Preventa	tive Prompting	Yes
Effective	Praise	Yes
Teaching	Interactions	Yes
	Seven Phases of Skill Acquisition	Yes
Verbal	De-escalation	Yes
Problem	Solving	Yes
Body	Basics	Yes
Professional Development	Off-site pre-service workshops	Yes
	Off-site in-service workshops	Yes
On-site	training	Yes
Consultation		Yes
Teaching-Fam	ily Certification	Yes
Additional non-standard procedure(s)	Functional Behavior Assessment	Yes

Teachers were trained in the use of functional behavior assessment procedures by the research team professionals who provided training and consultation services to

the group home staff. Note: The research team did not observe staff assessments of youth who participated in the study until after a four hour consultation during the treatment condition. The consultation occurred at the end of week 12.

The group home staff completed an antecedent, behavior, consequence (A,B,C,) in order to assess potential functions of aggression for each youth. Staff responded to the following: identify the time of day, location, persons present and proximity of persons to the individual, activities/events going on earlier in the day, immediately prior to, and following the aggression.

Teachers completed a Teaching-Family 1,2,3 Skills Assessment (Kirigin & Wolf, 1994) for each child. The 1,2,3 method involves the teachers and consultants/allied professionals developing a list of social, academic and self-help skills that are likely to be functional (and perhaps expected) in the setting in which the problem behavior occurs. Teachers then rate child use of skills from the list on a three-point scale. The purpose of the assessment is not to be a substitute for a full developmental or behavioral evaluation by an allied professional. Rather, the purpose is to involve teachers in understanding the child's strengths, framing the problem behavior, and committing to a plan of action.

Teaching-Family procedures included pre-teaching, preventative prompting, a motivation system (differential reinforcement of positive alternative behavior via a token system of points for privileges), teaching-interactions, teaching-family skill acquisition procedures, problem solving/non-directive counseling (S.O.D.A.S.), body basics and verbal de-escalation. These procedures are described in detail in

Appendices D and E. Note: The examples provided in the Appendices are for participants from the study presented in Chapter 2.

Design: Data are presented in the form of replicated case studies. Note: The discussion section in this chapter will further address the classification of the design.

Baseline: Baseline data show the number of aggression-related injury reports involving each youth when Teaching-Family procedures were in place, but no functional behavior assessment had yet been conducted.

Teaching-Family + Functional Behavior Assessment: Treatment data show the number of aggression-related injury reports involving each youth after a functional behavior assessment was conducted to direct treatment efforts.

Note: A four hour consultation with the group home directors regarding Aramis and Barrett's progress occurred at the end of week 12. The focus of the consultation was to re-assess the function of behavior for Aramis and Barrett.

Results: **Figure 1** shows the mean number of aggression-related injury reports involving each of the three youth before and after the addition of functional behavior assessment to guide Teaching-Family procedures. The mean number of reports involving Aramis each week during baseline was 3.5. After functional behavior assessment was added to direct the application of Teaching-Family procedures, the mean number of reports involving Aramis was .9.

The mean number of reports involving Barrett each week during baseline was 1.0. The mean number of reports involving Barrett each week after the addition of functional behavior assessment was .37.

The mean number of reports involving Tomas during baseline was 1.0. After the addition of functional behavior assessment Tomas' mean was 0.

For all youth injurious aggression was completely eliminated. Outcomes maintained for all youth for the duration of their placement in the group home. The group home staff confirmed the place of residence of each youth following release from placement. Court records indicated that no youth had been adjudicated for any offence

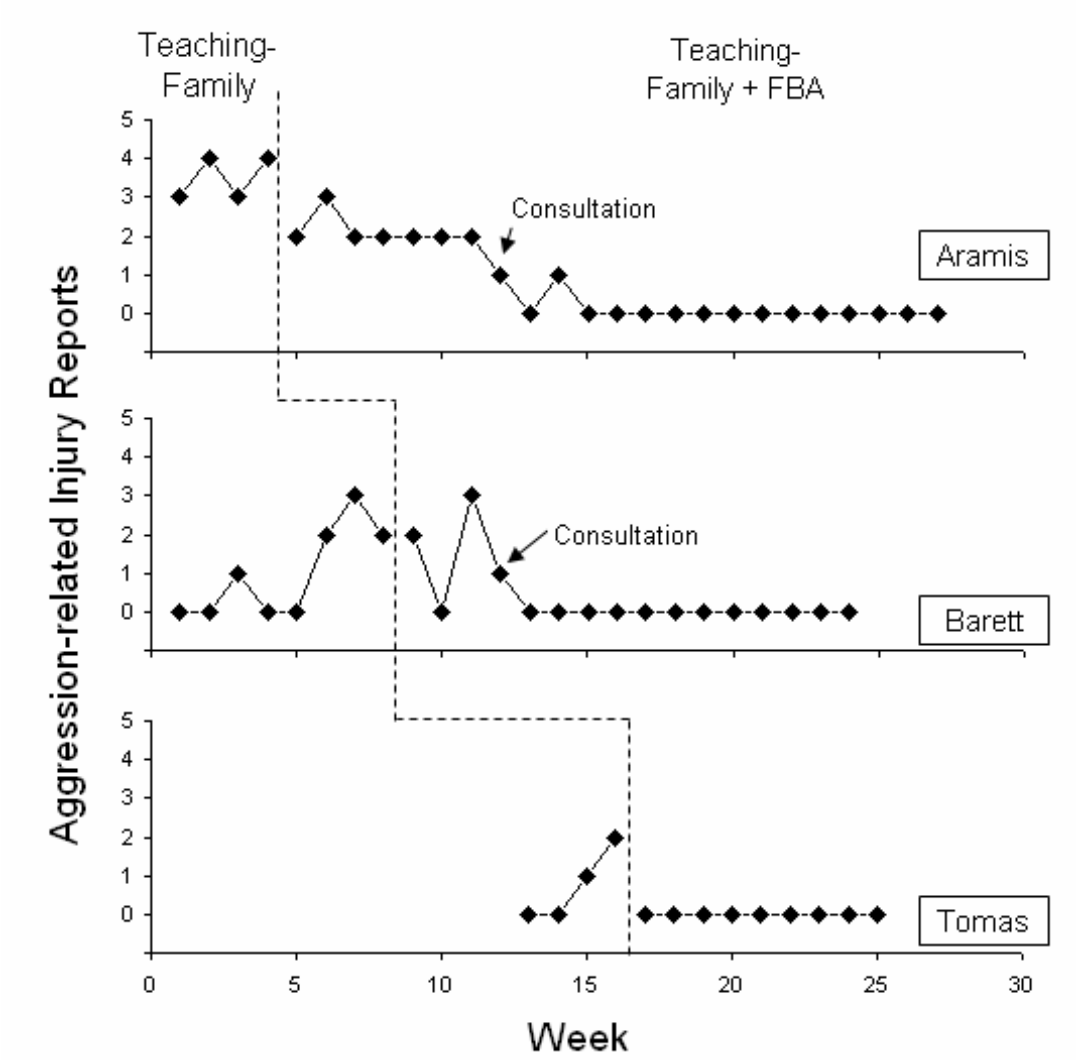

Figure 1: Aggression-related Injury Reports

26 months after their completion of the program.

Discussion

The study explored the possible effects of adding functional behavior assessment to Teaching-Family procedures on the injurious aggression displayed by three juvenile offenders. Prior to participation in the Teaching-Family program, each

of the three youth had been repeatedly adjudicated for violent offenses. Results indicated that prior to the addition of functional behavior assessment to guide the application of Teaching-Family procedures reports all three youth engaged in low levels of injurious aggression. Following the addition of functional behavior assessment to Teaching-Family procedures injurious aggression was slightly reduced. Following consultation regarding the use of functional behavioral assessment, injurious aggression was completely eliminated for all three youth. Court records indicated that none of the youth were adjudicated for any offence more than two years following their completion of the program.

Perhaps the best that can be said of the current study is that the results are mildly suggestive. The study adds to the Teaching-Family literature by providing an additional example of using the results of functional behavior assessment to direct group home staff use of Teaching-Family procedures. The results suggest, but by no means confirm, that the addition of functional behavior assessment may increase the effectiveness of Teaching-Family procedures. The study adds to the Teaching-Family maintenance literature documenting that youth previously adjudicated for violent offences were not adjudicated for any offence more than two years following their participation in a Teaching-Family program, thus suggesting that Teaching-Family outcomes are durable over time.

There are several limitations to the study. Like most Teaching-Family studies the number of participants is small. Use of the procedures with additional participants would bolster confidence in the effectiveness of the procedures.

Another limitation of the study is the use of the injury reports as the primary dependent measure. It is possible that demand characteristics associated with the consulting staff influenced staff completion of the injury reports following the consultation visit. Data derived from direct observation would have increased confidence in the validity and reliability of staff reporting.

The design has features of a partially non-concurrent baseline. However, because baseline data were not stable for Barrett the more conservative label of replicated case study has been used. Threats to internal validity that may have been controlled for by concurrent portions of the baseline (such as history effects) cannot be definitively ruled out. The failure of the case study design to control for such threats to internal validity is thus a further limitation to the study. The failure to use a true experimental design need not be a critical fault. Youth violence authors and reviewers Cullen and Gendreau (2001) emphasized the value of garnering knowledge from multiple sources including case studies, a view shared by other researchers (Carr et al., 2002; Flyvbjerg, 2006).

Formal treatment fidelity data were not collected. Therefore, the fidelity of implementation is unknown. Researchers have noted that faithful implementation of treatment procedures may be critical to success (Dahlberg & Potter, 2001; Eddy, Whaley, & Chamberlain, 2004; Elliot, 1998; Mihalic & Irwin, 2003). Future research should include measurement of treatment fidelity in order to further understanding regarding the effects of specific levels of treatment implementation.

Finally, given that researchers have speculated that improved quality of life may reduce youth violence (Glaser, Calhoun, & Puder, 2005; Howell, 2003; Mac Donald, Piquero, Valois, & Zullig, 2005; Tolan, 2001), future research might document improvements in quality of life following the use of Teaching-Family procedures.

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Chapter 2

Reducing Aggression and Improving the Quality of Life of Two Adults with Intellectual Disabilities.

Author's note: A version of the work in this chapter and Appendices A-H appear in:

De Wein, M. & Miller, L. K. (2009). The Teaching-Family Model: A program description and its effects on the aggressive behaviors and quality of life of two adults with intellectual disabilities. *Journal of Positive Behavior Interventions Online First,* April 7th, 2009, doi: 10.1177/1098300709332344

Readers may contact Sage Publications for copies.

Allen (2000) labeled aggression towards support staff for people with intellectual disabilities as one of the most perplexing problems facing service providers. Aggression is a common challenge experienced by staff supporting individuals with intellectual disabilities (Borthwick- Duffy, 1994; Emerson et al., 2001; Fry, O'Riordan, Turner, & Mills, 2002; Holden & Gitlesen, 2006; Jackobson & Ackerman, 1993). The costs of aggression to individuals with intellectual disabilities are substantial. Aggression may threaten their integration into the community (Fidura, Lindsay & Walker, 1987; Huguenin, 1993; Johnson, Walker, Palomo-Gonzalez, & Curry, 2006; Winkler, Unsworth, & Sloan, 2006) interfere with their learning (Hile & Desrochers, 1993; Matson & Schwalm, 2007) and reduce their access to work opportunities (Brown, Shiraga, & Kessler, 2006; Latham & Perlow, 1996).

The costs of aggression to institutions and service agencies can also be substantial. Aggression towards staff is a significant contributor to staff burnout (Mitchell & Hastings, 2001) and loss of staff work time (LePage et al., 2003). Additional costs may include staff turnover with subsequent re-hiring and training costs, staff hospitalization costs and liability.

The evidence-base to support the use of Teaching-Family procedures with adjudicated youth who display aggression was presented in Chapter 1. Teaching-Family researchers have added to that evidence-base by reporting evidence that suggests Teaching-Family procedures may be effective for reducing the aggression of persons with intellectual disabilities. Fabry, Reitz, and Luster (2002) documented reductions in the number of days that dually diagnosed children (mental health/mental retardation) accessed inpatient services. Aggression was a referral factor for several participating youth. Reese, Sherman, and Sheldon (1998) found that use of Teaching-Family procedures effectively reduced the aggression (labeled "disruptive behavior") displayed by a group-home resident with autism and mental retardation.

The emerging Teaching-Family aggression research involving persons with intellectual disabilities appears to be limited by at least three important factors. First, Teaching-Family research involving people with intellectual disabilities has not included separate, repeated, measurement of physical and verbal aggression. Thus, the separate effects of Teaching-Family procedures on physical and verbal aggression are unclear.

Second, Teaching-Family aggression research involving participants with intellectual disabilities has not documented whether or not the physical aggression displayed by participants was severe enough to cause injury to treatment providers or others. Thus, it remains unknown whether or not Teaching-Family procedures are effective with persons with intellectual disabilities who display injurious aggression. Documenting severity of aggression may also assist in treatment selection and prove useful for identifying common factors associated with onset (Crocker et al., 2006).

Third, Teaching-Family aggression researchers have not documented comprehensive changes in quality of life for persons with intellectual disabilities who display aggression. As noted previously, improving quality of life is the fundamental mission of the Teaching-Family Association.

The purpose of the current program description was to examine the effects of an intervention anchored in Teaching Family procedures on the aggression of two adults with intellectual disabilities. Two forms of aggression were measured: 1) Physical aggression towards people or property. 2) Verbal aggression. A second but equally important purpose was to examine the effects of the intervention on the quality of life experienced by the participants.

Method

Participants: Bob was a 28 year old male with an extensive vocabulary. He had a diagnosis of moderate mental retardation, severe obsessive compulsive disorder, and intermittent explosive disorder. Five weeks before the intervention Risperdol (2mg) was added to Bob's medications.

Guardian dissatisfaction with services, rapid staff turnover, and hospitalization costs for injured staff were referral factors. Bob had been served by 23 different fulltime staff in the year prior to the intervention. Written exit statements from 21 former staff members indicated that Bob's aggression was the reason for their resignation or transfer request. Agency records also showed that post insurance hospitalization costs for staff injured by Bob in the year prior to the intervention were approximately $18,000.

Percy was a 37 year old male, diagnosed with severe mental retardation and Prader-Willi Syndrome. Percy used verbal communication, gestures, and pictures to communicate. Percy had a long history of aggression. His teachers and allied staff reported that aggression prevented teaching that might lead to Percy's acquisition of self-care, work, social, and community integration skills. Parental dissatisfaction with services, the immediate need for Percy to lose weight, rapid staff turnover, and injury to staff were referral factors.

Setting: Bob and Percy were members of a community-based independent living organization serving about 200 adults with intellectual disabilities located in a small city on the great-plains. The researcher was part of a team that was assisting the program to transition to using Teaching-Family procedures. Teaching and non-intrusive data collection occurred within the participants' residence and the community as needed.

Response Definition and Reliability: *Webster's Medical Dictionary* defines aggression as: hostile, injurious, or destructive behavior or outlook especially when

caused by frustration. For this study aggression was divided into: 1) physical aggression towards people or property and 2) verbal aggression.

Physical Aggression was defined as: hitting, kicking, spitting, biting, shoving, shouldering, elbowing, or grappling which makes contact with another person or is directed toward another person within striking distance, throwing objects at or near others, forceful contact with objects causing them to be damaged, contact with materials in a way that has a history of causing damage (fist into wall without producing a hole, for example), and throwing objects away from others.

Verbal Aggression was defined as**:** yelling, screaming, or other loud vocalizations (directed at a person and accompanied by threatening body language), name calling, or threats (typical examples included "I get you." "I kill you.").

*Data Collection/Reliability***:** As part of routine procedures for the agency day-teachers maintained a motivation system card. Teachers carried the card at all times and documented the frequency of any physical or verbal aggression as immediately as possible. These data are summarized by month with data for the months of 15, 30 and 31 missing for Percy due to the unavailability of the reliability observers during that time. Follow-up data for Percy's physical aggression are also included.

Training for data collection: Teachers were trained to 90% criteria across 3 consecutive trials by master level consultants and master level team managers who served as reliability observers. The consultants/managers were themselves trained and supervised by Ph.D. level agency administration, and, by faculty who taught courses

in behavioral principles and procedures at a nearby university. Observers were generally aware that data were collected in order to evaluate the effects of any behavior plans that might be in effect. Observers were informed that data would be used for the purposes of this study in month 27. Location: Observations took place in Bob and Percy's apartments and in the community. Observations did not interfere with their daily activities. Percentage of reliability checks to total data collection was 20% during baseline and 21.9% during TFM.

*Agreement and range***:** Interobserver agreement and range. Interobserver agreement was calculated by dividing the number of agreements by the total number of agreements plus disagreements and multiplying the value by 100. Interobserver agreement for Bob's physical aggression was 100%. Interobserver agreement for Percy's physical aggression was 83% with a range from 76%-100%. Interobserver agreement for Bob's verbal aggression was 91% with a range of 87%-100%. Interobserver agreement for Percy's verbal aggression was 86% with a range of 78%-100%.

Procedures

Functional behavioral assessment and least intrusive prompting were added to standard Teaching-Family Components and Elements. **Table C** details the Components and Elements present in the current study. Additional details follow and also appear in the appendices.

Table C: Procedures for Adults with intellectual disabilities (studies 2,3,4)

Components Elem	ents	Present
Community-Based	Access to local schools, recreation etc.	Yes
Self-Determination Daily	Meeting	Yes
	Structured Peer Feedback	Yes
Making	Choices	Yes
Relationship Development	Group Activities	Yes
	Time with preferred persons	Yes
	Individual time with staff	Yes
Service Continuum	Universal: schools	Na
	Specialized: General T-F Curriculum	Yes
	Individualized: Indiv. T-F Curriculum	Yes
	Individualized Education Plan	
Skill Acquisition and Teaching Procedures	1,2, 3 Skills Assessment	Yes
Motivation	System*	Yes
Pre-Teach	ing	Yes
Preventa	tive Prompting	Yes
Effective	Praise	Yes
Teaching	Interactions	Yes
	Seven Phases of Skill Acquisition	Yes
Verbal	De-escalation**	Yes
Problem	Solving	Yes
Body	Basics	Yes
Professional Development	Off-site pre-service workshops	Yes
	Off-site in-service workshops	Yes
On-site	training	Yes
Consultation		Yes
Teaching-Fam	ily Certification	No
Additional non-standard Procedures	Functional Behavioral Assessment	Yes
	Least Intrusive Prompting	Yes

* modified to omit use of response cost
** modified to include additional tests for readiness to respond to instruction

Quality of Life Plan: All program procedures functioned in the context of the individual's Quality of Life Plan (QLP). The guiding philosophy was to make comprehensive life changes. The process was similar to the Person Centered Planning described by Kincaid & Fox (2002). Information such as the individual's goals, hopes and dreams as well as the individual's strengths were identified. Information obtained from the QLP was used to target skills that would help the men to achieve their goals and which might serve as alternatives to aggression. Examples are provided for Bob. The process was the same for Percy.

Bob's Goals: Bob shared his goals with the team. Bob's top three quality of life goals were to: 1) "Spend more good times with friends", 2) Get a "real job that pays good money", and 3) Become more independent ("take care myself", as Bob put it).

*Bob's Strengths***:** The team was asked to indicate which of Bob's strengths that they thought might help him to achieve his goals. They identified Bob's "giving nature", "good humor", and "desire to be with people" as strengths that might contribute to social opportunities and thus "more good times with friends". They identified his "work ethic", "enthusiasm for cars", and verbal repertoire as strengths for helping him obtain and retain a job. The team believed that Bob's existing self-help skill set might serve as an excellent start to learning to become even more independent.

Threats to Goals: The team was also asked to list factors that they thought might impede Bob's progress towards his goals. The team identified aggression as the leading threat to each of Bob's top three goals.

Quality of Life Indicators: Quality of life information was collected for comparative purposes. The researcher gathered quality of life information by conducting parent/guardian and teacher interviews, by reviewing daily activity records, by examining agency employment records, and by examining Bob and Percy's employment and medical histories (with their permission and that of a parent/guardian). Quality of Life Indicators for Bob and Percy appear in Appendices A and B.

In order to see whether or not the events recorded by teachers on the daily activity record corresponded with actual events, the researcher, a program director, or a consultant, conducted activity spot-checks. Each "checker" had a copy of Bob or Percy's schedule. Spot-checks were typically conducted three times each week. The spot-check schedule varied. The checker did not inform the teacher when checks would occur. The checkers would either witness an activity and join the activity in progress, or, discretely observe the activity without engaging the person served or teacher. The checker would later examine the daily activity record to determine if the activity recorded by the teacher corresponded with the actual events. During the monthly meetings the checkers would discuss whether there were any discrepancies.

A, B, C Reports: If a working hypothesis for the function(s) of aggression could be established, the suspected causes of aggression might be eliminated. In order

to assess the function of aggression team members completed antecedent, behavior, consequence (a,b,c) reports. Teachers completed ABC reports containing the information described below. Readers may note that the assessment form included more prompts for teachers than the assessment tool use in the study described in Chapter 1.

Antecedents and Setting Events: identify the time of day, location, persons present and proximity of persons to the individual, activities/events going on earlier in the day, and, immediately prior to aggression. Did anything out of the ordinary occur earlier in the day or week? Did the person participate in his/her usual activities? Did the person take any medications that may be prescribed? Has the person had any recent changes in medications? What was the person's emotional state earlier in the day, and, immediately prior to aggression? What other factors might set the occasion for aggression?

Behavior: What did the person say? Describe the person's physical actions (in words that can be acted out, if possible). Describe the person's facial expressions and body language. *Consequence:* What did the target of aggression do (both while being aggressed upon and immediately afterwards)? What did witnesses to the aggression do? What consequences, if any, did the teacher administer? List any other immediate results of the aggression. List potential long term results of the aggression. What did the person gain by being aggressive?

Potential Functions of Aggression: Based on the a,b,c reports the team hypothesized that Bob's aggression served several functions. The top six were:

1) Retain/regain possession of one of his belongings. 2) Escape or terminate conversations about abstract topics or that included many words that he did not typically use (aggression was often preceded or accompanied by Bob yelling "I not know what you say."). 3) Escape from close proximity to more than three or four people. 4) Gain access to fast food items (at the financial expense of his teachers). 5) Gain access to a local car wash (including transportation and coins to feed the machines). 6) Escape or terminate criticism or instructions.

Targeting Skills: The team targeted skills that might compete with aggression as well as help Bob to achieve his goals. For example, the skill "sharing" might compete with retaining possession of an item through aggression. Thus, "sharing" was targeted.

In the event that another person took something of Bob's without permission, the team believed that Bob had the right to express his feelings about the theft. In addition, Bob would need a way to recover his property without resorting to aggression. The skills "identify and label feelings" and "expand vocabulary" were added to the list of targets for Bob. (For example he might say, "That radio mine. I disappointed you not ask. Give it back please."). Requesting the return of the item would serve as a functional alternative to aggression provided that either the person returned the item or a teacher facilitated the return. In the event that the culprit did not return the item the skill "report problems with roommate or other" was added to serve both as a competing skill for aggression and to prompt the teacher to retrieve Bob's property.

The skill "expanding vocabulary" might serve the added function of assisting Bob to understand the conversations of others. If the team's hypothesis that aggression functioned to allow Bob to escape or terminate conversations was correct (hypothesis 2), increasing Bob's already expansive vocabulary might reduce or eliminate occasions in which he did not understand what the conversation was about. As part of his expanded vocabulary Bob might learn to ask for clarification. He might learn to say, for example, "What means [unknown word or phrase]?" Thus, there would be no need for aggression in order to escape or terminate [the embarrassment, frustration and anger from] a conversation that he did not understand. An expanded vocabulary might also help Bob to achieve his goal "spend more good times with friends" and help with his goal to get a "real job that pays good money."

The skill "identify and label feelings" combined with the skill "report whereabouts" might serve as an alternative to aggression. (For instance, Bob might say, "I not like so many people. I go to the wagon."). Bob's teachers would then not question or otherwise delay Bob during his sudden retreat from an area full of people. Thus, there would be no reason for Bob to aggress upon the teacher in order to escape from being in close proximity to people (hypothesis 3).

Additional skills that might assist Bob with other goals such as helping him to establish positive relationships (Goal 1 "spend more good times with friends") and which might compete with aggression are listed in Appendix C.

Teaching Tactics and Skill Acquisition Procedures: Once Bob's target skills were identified the next step was to teach the skills. Least intrusive prompting was

added to Teaching-Family Model teaching procedures. The TFM teaching and skill acquisition procedures as well as the adaptations to TFM for the intervention are listed in Appendices D and E.

Motivation System: Bob and Percy could earn a quarter during each hour contingent upon using skills targeted during each hour. Targeted skills were pre-printed on a card right next to scheduled activities which were also pre-printed on the card. The proximity of targeted skills to each scheduled activity was designed to serve as a prompt for teachers to provide Bob and Percy opportunities to use targeted skills at the appropriate time. Teachers circled each skill and activity upon completion and indicated that the quarter had been given with their initials.

Opportunities to spend the quarters were built into the schedule. A DRO was incorporated into the motivation system. Bob and Percy could earn special items or activities from a menu at the end of specified time blocks during each day as well as at the end of the week if no physical aggression had occurred. Appendix F contains an example section of Bob's adapted motivation system card along with the details of Bob's DRO.

Resident and Teacher Participation: An additional feature of the program was the emphasis on teacher and resident (Bob or Percy) participation. Meetings were held daily for one-half hour, and weekly for up to two hours. The time was used to discuss Bob's and Percy's progress, review data, share concerns or successes. Once a month the teaching team met with administration and parents/guardians to discuss and review progress. Bob and Percy typically attended daily and monthly meetings.

They shared their successes, reported any problems, and participated in problem solving.

Treatment Fidelity: Independent master-level program evaluators who had prior training as Teaching-Family program evaluators collected treatment fidelity data once per month. The evaluators conducted a motivations system card review (10 items) and a home-visit (20 items). Appendix G lists the items. Treatment fidelity was calculated by dividing the number of items completed (range 0-30) by the total number of items (30). Reliability for treatment fidelity was calculated by dividing the number of agreements by the number of agreements plus disagreements and then multiplying the value by 100%.

Adaptations: A list of ways in which Teaching-Family procedures were modified for use with Bob and Percy appear in Appendix H.

Social Validity: Sub-scales from the "Social Validity Inventory for Individuals with Developmental Disabilities" (Community Living Opportunities, 1995) were used to collect consumer feedback regarding the procedures and outcomes. Consumer responses to key items are presented in the results section.

Design

The design is a naturally occurring multiple baseline across two participants. Bob's treatment began at 15 months. Percy's treatment began at 21 months. The researcher was part of a team assisting the program to transition to using Teaching-Family procedures. At no time was treatment withheld for purposes of this program description.

Results

Figure 2 presents data on the frequency of physical aggression towards people or property. The mean rate for Bob during baseline was 5 per month. The mean rate for Bob during treatment was 1 per month. Thus, Bob's mean rate of physical aggression towards people or property was 80% lower during treatment than during baseline.

The mean rate of physical aggression towards people or property during baseline for Percy was 382 per month. The mean rate for Percy during treatment was 83 per month. Thus, Percy's mean rate was 78% lower during treatment than during baseline.

Figure 2: Physical Aggression of Two Adults with Intellectual Disabilities

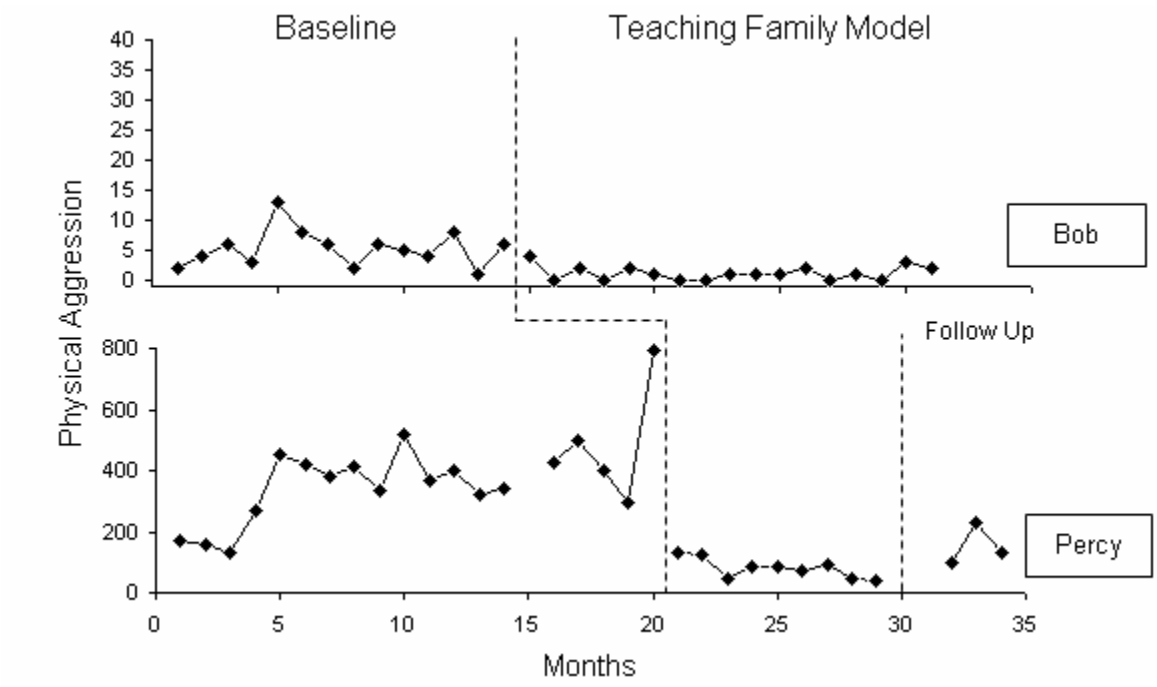


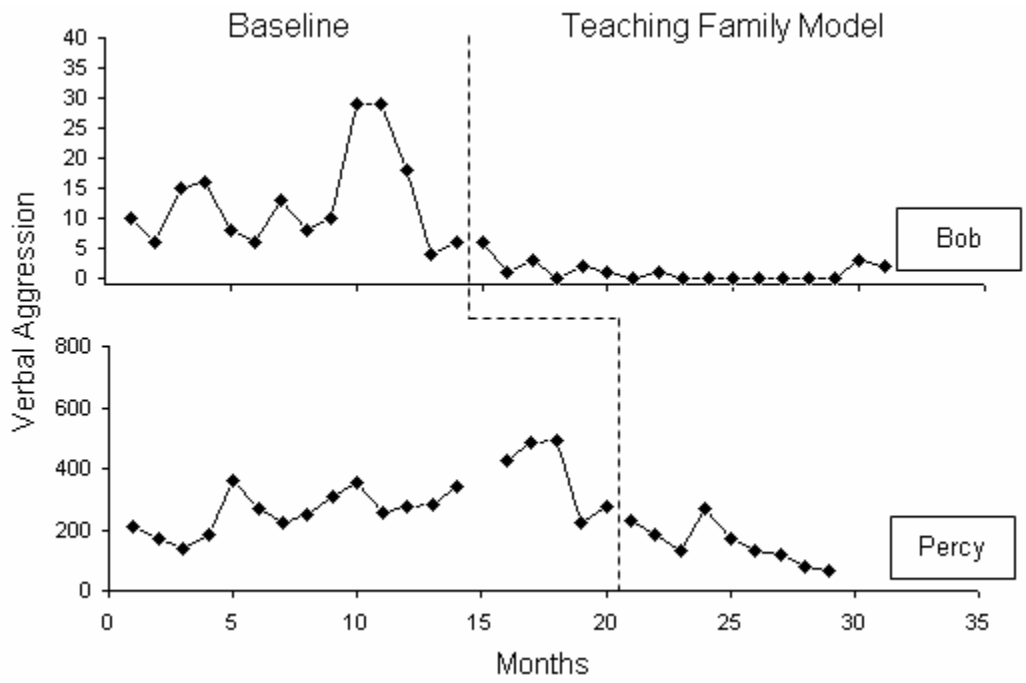
Figure 3 shows the effects of Teaching-Family procedures on Bob and Percy's verbal aggression. The mean rate of verbal aggression during baseline for Bob was 10 per month. The mean rate of verbal aggression during treatment was less than 1 per month. Bob's mean rate of verbal aggression was 90% lower during treatment than during baseline.

The mean rate of verbal aggression for Percy during baseline was 276 per month. The mean rate of verbal aggression during treatment was 134 per month. Percy's mean rate of verbal aggression was 52% lower during treatment than during baseline.

Teachers for both Bob and Percy reported that the intensity of both physical and verbal aggression was greatly reduced. Teachers also reported that aggression no

longer prohibited teaching or conducting daily activities. Percy's parents reported that all forms of aggression were no longer an issue during home visits (which resumed following treatment).

Figure 3: Verbal Aggression of Two Adults with Intellectual Disabilities



Quality of Life: The researcher, consultants, and program directors conducted activity spot-checks to confirm that teacher reporting of daily activities was accurate. In all instances, the checks confirmed that teacher reports on the daily activity record corresponded with the actual activities in which the men were engaged.

Appendix A shows quality-of-life indicators before and after use of Teaching-Family procedures with Bob. Example gains included increased social contact from less than half an hour per week to upwards of 8 hours per week,

increased employment (at a community job paying over minimum wage) from none to over 7 hours a week, and increased independence such that Bob selected and made his own meals, dialed the phone independently and shaved independently. In addition, full time staff turnover was reduced from 23 per year during baseline to less than 2 per year during treatment. Post insurance hospitalization costs were reduced from nearly $18,000 during baseline to none after use of Teaching-Family procedures.

Appendix B shows quality of life indicators before and after use of Teaching-Family procedures with Percy. Example gains include losing 65 pounds thus avoiding knee surgery (while having free access to his kitchen), increased contact with his parents from no weekend home visits to staying with parents every weekend, and increased work from none to 5 hours/week.

Treatment Fidelity: Once per month the fidelity evaluators informed the team whether or not the team had met fidelity criteria (90%). The evaluators also reported whether or not evaluator agreement was 90% or higher for each monthly observation. The team met the 90% criteria each month for the duration of the study. The evaluators reported observation agreement of 90% or higher on all occasions.

During the last five months of TFM administrative responsibilities prohibited implementation by the researcher. During that time the intervention was implemented solely by staff without advanced degrees or extensive training in behavioral procedures. Treatment fidelity data for Percy in each of three months after the researcher left the setting indicated that staff continued to meet the 90% fidelity

criteria. Evaluators noted, however, that teachers did not often use planned or planned spontaneous teaching (see appendix C) in the absence of researcher supervision.

The researcher visited the setting two years after the study. He examined written records which indicated that the teachers continued to correctly use motivation systems, participation plans, and activity schedules for both participants.

Social Validity: The "Social Validity Inventory for Individuals with Developmental Disabilities" (Community Living Opportunities, 1995) was used to collect feedback regarding the procedures and outcomes. Rated on a 6 point Likert-like scale the overall average across 154 responses was 5.3. Most items were rated as "highly satisfied" or "completely satisfied".

Responses to key items from the sub-scales "Parent/Guardian Quality of Life Questionnaire" and "Parent/Guardian Feedback" were as follows: Bob, or Percy…has his rights taught, provided, and respected by teachers (Bob 6, Percy 6), receives appropriate health support services (Bob 5, Percy 6), has an individualized engaging schedule (Bob 6, Percy 6), has an appropriate number of choices through the day (Bob 6, Percy 6), has sufficient opportunities for community integration (Bop 6, Percy 6), has sufficient learning opportunities that enable him to be more independent in the community (Bob 6, Percy 5), has sufficient learning opportunities that enable him to more independent at home (Bob 6, Percy 5) is taught to communicate through formal programs and natural opportunities (Bob 6, Percy 5), is learning new skills (Bob 6, Percy 6), is developing friendships with others (Bob 6, Percy 6), has a high quality of life (Bob 6, Percy 6).

Responses to key items from the sub-scale "Satisfaction Evaluation for Employers" were as follows: Your employee has sufficient access to transportation (Bob 6, Percy 5), arrives on time (Bob 6, Percy 4), interacts well with others (Bob 6, Percy 5), and, performs his job well (Bob 6, Percy 6)

Discussion

The current program description presents data on a potentially useful program for addressing physical and verbal aggression displayed by adults with intellectual disabilities. The mean frequency of physical aggression was reduced by nearly 80% for both Bob and Percy. Bob's mean verbal aggression was reduced by 90% and Percy's mean verbal aggression was reduced by 52%. Physical aggression decreased at different times for Bob and Percy and only use of Teaching-Family procedures. Verbal aggression likewise decreased at different times for Bob and Percy and only after use of Teaching-Family procedures. Therefore, it appears reasonable to conclude that the use of Teaching-Family procedures was effective for reducing both physical aggression, and, verbal aggression, for Bob and Percy.

The current program description documents that injury to staff and subsequent staff turnover were referral factors for both participants. For Bob, post-insurance hospital costs were an additional referral factor. After the use of Teaching-Family procedures, staff turnover was greatly reduced and no hospital costs were incurred. In addition, teachers reported that the intensity of aggression was greatly reduced and was no longer prohibitive to teaching or conducting daily activities. These outcomes

suggest that Teaching-Family procedures effectively reduced injurious aggression displayed by Bob and Percy.

Quality-of-life indicators such as medical condition, employment, relationships, self-determination, independent living, and filling an important role increased for both Bob and Percy after the use of Teaching-Family procedures. Bob fulfilled his goals to "spend more good times with friends", to "get a real job", and to become more independent. Percy avoided knee surgery by losing 65 pounds. Perhaps most gratifying was that Percy continued to spend weekends with his parents. These outcomes demonstrate that Teaching-Family procedures can produce comprehensive changes in quality of life for adults with intellectual disabilities who display aggression.

Six months after the researcher left the setting he was invited to visit Bob at Bob's new apartment. Bob shared that he still had his job which the teachers confirmed. Bob also shared that he still saw his friends regularly and continued to visit many of the same places in the community. The teachers confirmed this information as well. The researcher also visited with Percy about six months after leaving the setting. Percy had maintained his loss of weight. Percy reported seeing his parents often. His parents confirmed that he continued to spend each weekend with them and further reported that Percy had maintained his five hours of weekly employment. These outcomes suggest that the quality-of-life gains produced by Teaching-Family procedures are sustainable.

Northup, Vollmer, and Serrett (1993) reported that at least 60% and possibly as many as 80% of interventions reported in Journal of Applied Behavior Analysis over 25 years were conducted by researchers and not by implementers typical to the setting. Carr et al. (2001) indicated that interventions should be implemented by typical staff. The current program description provides an example of implementation of a complex intervention by typical staff for a significant portion of the treatment period.

Researchers report that the integrity with which many behavioral interventions are delivered is either low or unmeasured (Gresham, Gansle, & Noell, 1993; McIntyre, Gresham, DiGennaro, & Reed, 2007). Researchers also report that staff may stop using behavioral procedures in the absence of researcher supervision (Abbott, Greenwood, Tapia, & Walton, 1999; Baer, 1989; Greenwood & Abbot, 2001; Witt, 1986) or in the presence of severe behaviors (McClintock, Hall, & Oliver, 2003; Tynan & Allen, 2002). The current program description documents that teachers used the procedures correctly both in the absence of the researcher and in the presence of severe behaviors

The question arises as to why the staff continued using the intervention. One speculation is that implementation by the staff may have been strongly negatively reinforced by avoidance of painful aggression. Consultants continued to provide between one to two hours of feedback each week, but it seems unlikely that the consultation alone sustained implementation. It seems more likely that threat of injury was the main factor responsible for maintaining teacher implementation of the

procedures. It may be that the survival of other behavior analytic interventions that do not produce strong negative reinforcement will require additional programming.

Limitations: A limitation of the research is five weeks prior to the intervention 2 mg risperidone were added to Bob's medications. During the month immediately prior to the intervention, Bob's level of physical aggression remained very near the baseline mean (note: risperidone can take up to six weeks to take effect). Bob's risperidone was reduced to 1mg six months into treatment without a subsequent rise in aggression. In addition, Percy did not take Risperdol and yet his aggression remained high in the absence of the intervention and was lower during the use of Teaching-Family procedures. Thus, it appears that the Teaching-Family procedures were functional in decreasing Bob's physical aggression. However, because Bob remained on his medication during the use of Teaching-Family procedures the effects of the medication and the procedures can not be separately evaluated. It is possible that both the medication and the intervention contributed to Bob's decrease in aggression.

Reduced verbal aggression for Bob in each of the two months immediately prior to the intervention suggests that verbal aggression may have declined without the need for Teaching-Family procedures. The report of a former staff member may explain the decline. The staff member reported that during the two months prior to the intervention, he had spent $40.00 per week on fast food in order to escape or avoid Bob's demands for fast food. It should be noted that the team judged a "burger

program" to be inappropriate and non-sustainable. During treatment Bob paid for his own fast food with his earnings from work.

While Percy's physical and verbal aggression were greatly reduced, the intervention did not completely eliminate aggression. Both Percy's physical and verbal aggression persisted (albeit at lower rates and greatly reduced intensity) during treatment.

Percy's slightly elevated level of aggression during follow-up may be related to the fact that several people with whom he had a positive relationship had recently left the setting. These people included the researcher, a favored teacher, and a program director. Percy may have been testing the limits with the new staff. Nonetheless, additional programming may be needed in order to further lower Percy's aggression.

Teachers and the consultants informally observed that physical aggression towards property (throwing, breaking objects) made up a very small fraction of physical aggression for both Bob and Percy compared to physical aggression directed towards people. Nonetheless, a limitation of the study is that aggression towards property was included within the definition of physical aggression. Separate measurement of aggression towards people and aggression towards property would allow the separate effects of the intervention on each form of physical aggression to be analyzed.

A core element of the procedures is planned and planned-spontaneous teaching (see Appendix E). Fidelity evaluators reported that teachers seldom used planned or planned-spontaneous teaching in the absence of researcher supervision.

Teachers therefore, did not independently use a component of the skill acquisition procedures. Additional programming will likely be needed in order to foster independent use of planned and planned-spontaneous teaching by the teaching staff.

Future Research: Future researchers might 1) measure the intensity of each discrete instance of aggression so that the relative effects of the intervention on aggression of different intensity levels can be examined, 2) analyze the effects of simplifying procedures on procedural fidelity, 3) explore the extent to which threat of injury contributes to procedural fidelity, and 4) continue to examine the degree to which Teaching-Family procedures result in improved quality of life for the person served.

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Chapter 3

More about Bob: Reducing the Elopement of an Adult with Intellectual Disabilities

Researchers have used the word "elopement" to describe the event of a person under another's care leaving a designated area without the agreement of the caregiver (Lowe et al., 2007). Researchers have stated the need to address elopement in institutions (McGrew, Wright, Pescololido, 1999), community programs (Fabry, Reitz, & Luster, 2002, Lutzker, Steed, & Huynen, 1998), schools (Freeman et al., 2006) and within family residences (Buschbacher, Fox, & Clark, 2004; Dunlap & Fox, 2007). Elopement is dangerous because eloping individuals may not possess the requisite skills to navigate traffic, protect themselves from exploitation or manage other difficult situations which may cause them harm. Because of these risks, researchers have described elopement as one of the most challenging and dangerous problem behaviors displayed by individuals with intellectual disabilities (Feldman, Atkinson, Gerais, & Condillac, 2004; Kurtz et al., 2003; Lang et al., 2009; Ruble & Dalrymple, 1996; Volkert, Lerman, & Vorndran, 2005).

Despite the dangers posed by elopement very little elopement research has been conducted. In fact, researchers have commented on the need for elopement documentation (Quinsey, Book, & Skilling, 2004) and research (Lang et al, 2009). Barnett et al. (2006) described treatment processes that they posited might result in effective interventions for reducing elopement and other challenging behaviors. Researchers have conducted research in which elopement was one of several

challenging behaviors displayed by participants. Luiselli, Pace and Dunn (2006) reported reductions in the duration of restraint in response to challenging behaviors including elopement following the application of contingent and fixed-time release contingencies. Researchers reported reductions in challenging behaviors including elopement following the use of functional communication training (Olive, Lang & Davis, 2008), parent attention and access to preferred items (Finkel, Derby, Weber, &McLaughlin, 2003) and the use of prompt training and reinforcement (Ferguson, Ashbaugh, O'Reilly, & McLaughlin, 2004).

There is an emerging body of literature focusing specifically on elopement. Piazza et al. (1997) used the results of functional analyses and preference assessments to develop successful treatments to reduce the elopement of three children with developmental disabilities. Following functional analyses and preference assessments, Piazza et al. enriched the environment by providing non-contingent access to preferred items for one child, differential reinforcement (e.g. alternative behavior of making appropriate requests) plus blocking of elopement for another, and differential reinforcement of other behavior with a third child. All three interventions reduced elopement below baseline levels. Additional research replicating the findings of Piazza et al. (1997) supports the practices of enriching the environment and using differential reinforcement of alternative behaviors to reduce elopement (Perrin, Perrin, Hill, & Dinovi, 2008; Tarbox, Wallace & Williams, 2003).

In their review of the elopement literature, Lang et al. (2009) searched three data-bases including the Education Resource Information Center, Psychology and

Behavioral Science Collection and PsychINFO for the keywords “elopement”, “wandering” and “running away” plus “developmental disability”, “autism”, “mental retardation”, “intellectual disability”, “Down syndrome”, or “syndrome”. They found 75 articles meeting search criteria. Of the 75 articles, only10 articles presented data on the effects of procedures used to reduce elopement. Note: The 10 studies included Piazza et al. (1997), Perrin, Perrin, Hill, & Dinovi (2008) and Tarbox, Wallce & Williams (2003).

While the 10 studies form a nucleus of elopement research, Lang et al. (2009) concluded that more elopement research is needed. In particular, more research is needed that documents the complete and maintained elimination of elopement. Of the10 articles reviewed by Lang et al. only four articles included reports of reducing elopement to zero levels. Two articles included reports that elopement was completely eliminated relatively quickly after treatment began (Olmi, Sevier, & Nastasi, 1997; Padget, Garcia, & Pernice, 1984). One article included a report that elopement was reduced to zero after seven months (Garner, 1990) and another included a report that elopement was reduced to zero but resurged after six months (Bowman, 1996). Piazza et al. (1997) included a report that elopement was reduced to “near zero levels” for one of three participants. The other five studies included in the Lang et al. review did not provide evidence that elopement had been either completely eliminated or reduced to near zero levels. Lang and colleagues emphasized that because of the dangerous nature of elopement more stringent criteria for classifying study outcomes as positive should be employed. Only one of the

function based interventions (Olmi, Sevier, & Nastasi, 1997) resulted in the complete elimination of elopement. Lang and colleagues called for more examples of function-based treatments for elopement.

Teaching-Family procedures may be effective for reducing the elopement of individuals with intellectual disabilities. As was presented in Chapter 2, Teaching-Family procedures reduced extremely challenging behaviors (physical and verbal aggression) of two adults with intellectual disabilities. Fabry, Reitz, & Luster (2002) documented reductions in the number of days that children with intellectual disabilities spent in hospitals following the use of Teaching-Family procedures. Reese, Sherman, & Sheldon (1998) reported reductions in the frequency of disruptive behavior displayed by an adult with intellectual disabilities living in a group home. Taken together, these studies suggest the possibility that Teaching-Family procedures may prove effective for reducing another extremely challenging behavior, elopement, displayed by an individual with intellectual disabilities. The purpose of the current study was to explore the effects of Teaching-Family procedures on the elopement of an adult with intellectual disabilities.

Setting: The study setting was the same as that described in Chapter 2. Readers may recall the setting was an independent living program serving adults with intellectual disabilities. The providing agency served about 200 adults. Data were collected over the same time period as the aggression study from Chapter 2.

Participant: One adult with intellectual disabilities (Bob) participated in the study. Readers may recall Bob from Chapter 2. Bob had a diagnosis of moderate

mental retardation, severe obsessive compulsive disorder and intermittent explosive disorder. Bob's psychiatrist prescribed 2mg of Risperidone daily five weeks prior to the intervention. Risperidone was reduced to 1mg six months into the treatment condition.

Bob's elopement was of particular concern to his teachers and his guardian. On several occasions he had run into moving traffic. In one instance he caused an accident resulting in injury to himself and to a driver. Prior to the intervention teachers reported losing sight of Bob for more than an hour at a time. Teachers reported that Bob would elope to his residence, to friends' apartments or to the agency's central office building located within a few miles of Bob's home.

Definition and Measurement: Elopement was defined as Bob leaving a designated area (e.g. the car, Bob's apartment, the apartment of a friend, the store they were in) without the agreement of his teacher.

Reporting Procedures: The primary dependent measure was the number of elopement incident reports filed by teachers each month. Teachers were instructed to call their management team leader as soon as possible upon Bob's elopement. The team leader would then immediately provide support either in person or by sending an additional staff member. As soon as possible after Bob was again accompanied by and responsive to his teacher, the teacher would complete an incident report form. The form contained information such as the circumstances under which both the elopement and re-accompaniment occurred (e.g., locations, the time of day, persons present). Each incident report form was signed by both the teacher on duty at the time

of Bob's elopement and the team leader or other responding staff member. Thus, two staff members witnessed each occurrence of elopement. Note: No report indicated that Bob returned to the on duty teacher prior to the arrival of support staff/witness during either baseline or treatment. The researcher reviewed separate staff contact logs which indicated the location and activities of staff each day. The logs were in 100% agreement with the incident report forms.

Interviews: Even if the team leader was one of the responding staff members, the team leader would interview all responding staff to confirm details and to explore the possible functions for Bob's elopement.

A,B,C Reports: An A,B,C (antecedent, behavior, consequence) form identical to that described in Chapter 2 accompanied each incident report. Based on the teacher interviews and the A,B, C reports the team hypothesized regarding the possible functions of elopement for Bob. Several of the functions were those that the team suspected were also related to his aggression. The suspected functions of elopement were 1) to escape close proximity to more than three or four people, 2) to gain access to car washes (if Bob eloped after a teacher had refused to take him to the car wash, the teachers appeared to be more likely to take him upon future demands), 3) to gain access to attention, food and activities provided by persons other than Bob's teacher after the teacher had refused a request and 4) to escape or avoid future criticism or instructions.

The Intervention

The procedures used to reduce elopement were the same as those used to reduce Bob and Percy's aggression. In particular, teachers used Teaching-Family Skill Acquisition and teaching procedures (described in Chapters 1, 2 and the Appendices) to differentially reinforce positive alternative behaviors. In regard to hypothesis 1, "*escaping closing proximity to more than three or four people"* the team identified the skills identifying/communicating feelings, reporting whereabouts and expanding general communication. For hypothesis 2, *"to gain access to car washes"* the team identified the skills accepting the answer no, negotiation and problem solving, and expanding communication skills. For hypothesis 3 "*gain access to attention, food etc.*" the team again identified accepting the answer no, problem solving and negotiation as well as complimenting others, consideration/helping others and expanding communication skills. For hypothesis 4 "*to escape or avoid criticism or instructions"* the team identified the skills accepting criticism and following instructions.

Motivation System: As with procedures from Bob's aggression plan, Bob could earn a quarter during each hour contingent upon using positive alternative skills targeted during each hour. Targeted skills were pre-printed on a card right next to scheduled activities which were also pre-printed on the card.

Differential reinforcement of other behavior: Specific highly preferred activities (e.g. carwash) were made contingent upon Bob's non-elopement for one week.

Quality of Life Planning: Readers may recall that Bob's treatment functioned in the Context of his Quality of Life Plan. Thus, part of Bob's intervention was to teach him skills that would improve his overall quality of life. The skills might help Bob to enrich his environment and perhaps reduce the likelihood of elopement. Bob stated that he liked his house to be "neat and clean." Thus, in order to help Bob to improve the quality of his home environment as well as increase his independence, the team identified the skills shaving, dusting, vacuuming, washing dishes and wiping the sink and counters. These skills might also help Bob to prevent criticism (Hypothesis 3, Bob might elope in order to escape or avoid criticism related to his personal appearance or that of his home).

The team also identified the skill "making plans/keeping commitments" which in addition to the skills note above might help Bob to retain a job. He could then use the money gained from work to do things he might like (e.g., Take friend to a movie, go to a coffee house, swim at the pool, go play pool, eat at a sit down restaurant). Essentially, the team was trying to expand the scope of preferred activities for Bob by providing access to and teaching him how to participate in those activities. Most of the activities (e.g. going to the park, riding his bike, visiting friends, grilling out in the backyard) were made available on a non-contingent basis. In addition to improving his quality of life, expanding Bob's base of preferred activities might 1) reduce the reinforcing value of the car wash and fast food and thereby, 2) result in a decreased probability of elopement following teacher refusal to take Bob to the car wash or fast food.

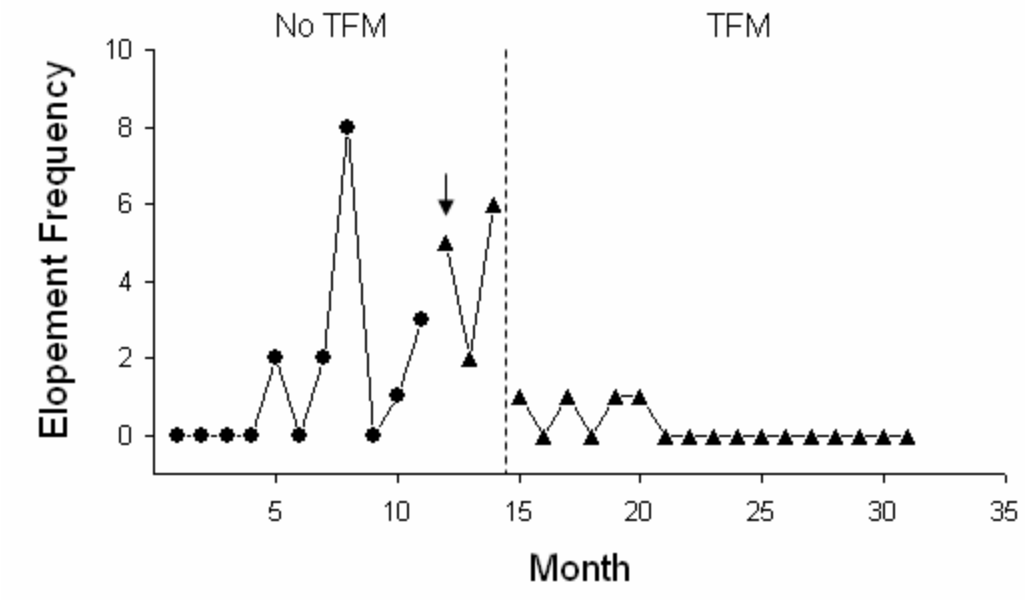
Design: A non-experimental before and after design was used.

Baseline: No teaching-family procedures were in place.

Treatment: Teaching-Family procedures were used to teach Bob new skills and differentially reinforce those skills.

Results: **Figure 4** shows the frequency of Bob's elopement before and after the Teaching-Family intervention. The arrow indicates Bob's move to another apartment after being evicted from his prior residence. Bob's mean rate of elopement during baseline was 2 per month. Bob's mean rate of elopement after TFM was .23 per month. Bob's rate of elopement was lower during TFM compared to baseline.

Figure 4: Elopement of an Adult with Intellectual Disabilities



Discussion: The study explored the effects of Teaching-Family procedures on the elopement of an adult with intellectual disabilities. Results indicate that elopement was lower during the use of Teaching-Family procedures compared to baseline. Elopement was completely eliminated by month 7 and remained extinguished 10 months later.

The study extends Teaching-Family research by providing suggestive evidence that Teaching-Family procedures may reduce the elopement of individuals with intellectual disabilities. The study contributes both to the Teaching-Family and to the broader literature by adding to the very small base of studies documenting the sustained elimination of elopement. The study adds further to the broader literature by providing an additional example of a function-based intervention used to eliminate elopement.

A major limitation of the study is the use of the before and after design which does not rule out alternative explanations for Bob's change in behavior. Thus, the results should be viewed as inconclusive. Future researchers might consider using of an experimental design that controls for threats to internal validity and thereby allow for a more conclusive analysis. However, given the risks posed to the person served and other ethical concerns, researchers will need to carefully assess the risks and benefits of withdrawing or withholding treatment.

A second limitation of the study is reliance on the incident reporting of Bob's teachers. While each report of elopement was confirmed by two witnesses, it is possible that Bob's teachers did not report every instance of elopement. It should be

noted however, that Bob was prone to eloping to conspicuous places that were well known to him (apartments of other persons served by the agency, the agency's central office). It seems unlikely that he would have changed his destination or that he could have eloped to agency locations without any agency staff reporting his elopement.

The 2mg of Risperdone taken by Bob is a third limitation of the study. While the medication was prescribed for his aggression, it is possible that the medication could have influenced Bob's rate of elopement. Bob eloped five times during his first month on the medication (interspersed throughout the month) which was an increase from the prior month. The increase suggests that the medication may not have functioned to lower Bob's elopement. However, six weeks may be needed before risperidone takes effect. It should be noted that six months into the intervention Bob's risperidone was reduced to 1mg daily without subsequent rise in elopement.

Future Research: In the current study implementers used differential reinforcement of alternative and other behavior (DRA and DRO) as well as non-contingent access to potentially preferred activities (NCR), in combination with Teaching-Family teaching procedures. Results indicated that following the intervention elopement was completely eliminated. However, the separate effects of each component were not evaluated. Prior research (e.g. Piazza et al., 1997) suggested that any one of NCR, DRA, or DRO successfully reduced, but did not entirely eliminate elopement. Future research might involve comparing the results from interventions containing various combinations of components in order to determine the most efficient interventions for completely eliminating elopement.

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Chapter 4

Even More About Bob: Skill Acquisition of an Adult with Intellectual Disabilities with a History of Aggression and Elopement

Teaching-Family researchers have documented skill acquisition by adults with intellectual disabilities (Bannerman, Sheldon, & Sherman, 1991; Krantz, Ramsland, & McClannahan, 1989; Schneider, Kinlow, Galloway, & Ferrow, 1982). An interesting aspect of these studies is that the skills did not appear to be acquired by persons with lengthy histories of extremely challenging behaviors. Prior to the widespread use of functional behavior assessment, the conventional wisdom was that the display of challenging behaviors might require use of intrusive behavior reduction procedures. The intrusive procedures would be used to reduce the response strength of the challenging behaviors thereby permitting implementers to teach to new skills (Hile & Desrochers, 1993). With the rise of functional behavioral assessment in the mid to late 1990s the new philosophy was that persons who display challenging have a fundamental right to learn new skills that may increase their quality of life. The increase in quality of life might reduce the potential for aggression. So important was the notion of teaching new skills in the face of challenging behaviors that doing so became central to the provision of positive behavior supports (Carr et al., 2002).

Researchers face an interesting dilemma when reporting the results of their efforts to reduce challenging behavior while also teaching new skills or increasing the performance of existing skills. Researchers can report on skill performance or report

the reduction of the problem behavior. An alternative is to first present data documenting the reduction of the problem behavior (as in Chapters 2 and 3) and then document skill acquisition by the same individual using data taken during the same time frame as the prior study.

The purpose of the current study was twofold. The first purpose of the study was to examine the effectiveness of Teaching-Family procedures on Bob's (from Chapters 2 and 3) performance of three skills in the context of Bob's ongoing aggression and elopement. The second purpose of the study was to observe which skills maintained and which did not maintain.

Setting: As in the studies from Chapters 2 and 3, the setting of the study was community-based independent living organization serving about 200 adults with intellectual disabilities located in a small city on the great-plains. The researcher was part of a team that was assisting the program to transition to using Teaching-Family procedures. Teaching and non-intrusive data collection occurred within the participants' residence and the community as needed.

*Participan*t: The participant was Bob (from Chapters 2 and 3). Bob was a 28 year old male with a diagnosis of moderate mental retardation, severe obsessive compulsive disorder and intermittent explosive disorder.

Measures: Bob's performance of three behaviors was measured. The behaviors were shaving, labeling feelings and identifying numbers. The frequency of Bob's performance of these behaviors was derived from a review of his motivation

system card. As detailed in Chapter 2, Bob's teachers carried his motivation system card at all times and recorded Bob's performance of targeted skills.

Reliability: Reliability collection to total data collection was about 20% during baseline and about 22% during treatment. Interobserver agreement was calculated by dividing the number of agreements by the total number of agreements plus disagreements and multiplying the value by 100. Reliability for shaving and the per cent correct of numbers identified by Bob was 100%. Reliability for labeling feelings was 98% with a range of 66% to 100%. The 66% occurred when Bob labeled a feeling in a soft voice that the observer did not hear.

Definitions:

Shaving: Observers witnessed Bob apply foam to his face and use a traditional safety razor to shave. The frequency of Bob's shaving each month is presented in **Figure 5**.

Identifying/communicating feelings: Bob reported his emotional condition by stating his feelings out loud. Bob's verbalizations did not have to be exact matches to exemplars in order to be recorded. Thus the word "fustated" was sufficient to communicate "frustrated" and the phrase "I disappointment my friend not come" communicated his disappointment that a friend had broken plans. Feeling labels included but were not limited to mad, sad, glad, disappointed (disappointment), frustrated, excited, anxious, worried, nervous, not sure, happy, okay, descent, like and not like. The frequency of Bob's identification of feelings each month is presented in **Figure 5.**

Identifying numbers: Bob was presented with 10 random opportunities to identify numbers from a combination of flashcards and numbers appearing in his apartment such as on the phone, microwave or license plates of cars from the parking lot. The numbers ranged from the number "1" to the number "10." Each number was presented and each number was presented only once. Teachers wrote down the per cent of numbers which Bob correctly identified over 10 trials.

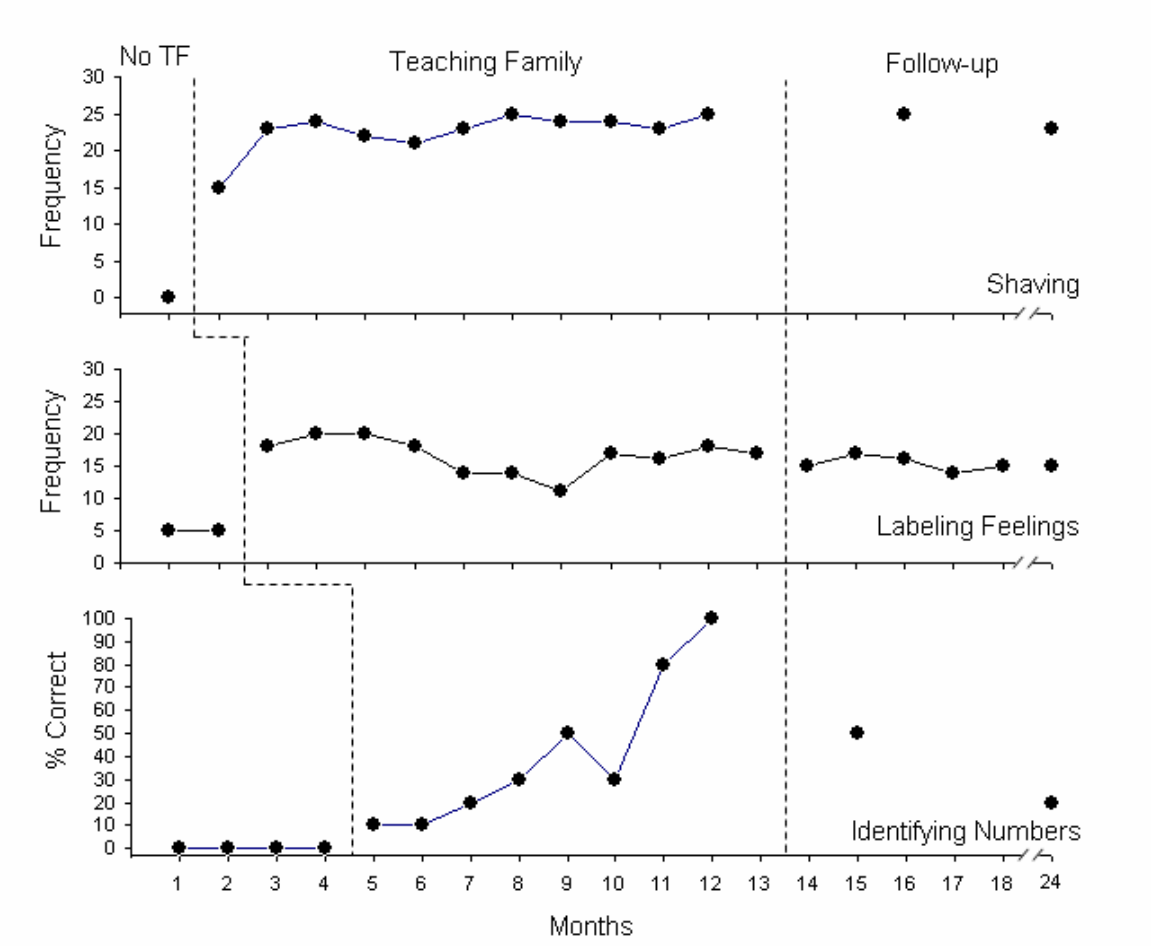
Procedures: The procedures were the same as those described in Chapters 2 and 3. Details regarding which Components and Elements were in place and the details of these procedures appear in Chapter 2 and in the Appendices. Other than the flashcards for numbers no additional materials were required.

Results: **Figure 5** shows Bob's skill acquisition before and after use of Teaching-Family procedures. Bob's mean rate of shaving during baseline was 0 per month. Bob's mean rate of shaving after use of Teaching-Family procedures was 20 per month. Bob's shaving sustained during follow-up.

Bob's mean rate of labeling feelings during baseline was 5 per month. After the use of Teaching-Family procedures Bob's rate labeling feelings rose to about 17 per month. Bob's labeling feelings sustained during follow-up.

The mean per cent of trials in which Bob correctly identified numbers during baseline was 0. The mean per cent of trials in which Bob correctly identified numbers after the use of Teaching-Family procedures was 46%. Bob's correct identification of numbers did not sustain during follow-up.

Figure 5 Bob's Skill Acquisition before and after Teaching-Family skill acquisition procedures



Discussion

The study examined the effects of Teaching-Family procedures on the skill acquisition of an adult with intellectual disabilities. Results indicate that skills increased after use of Teaching-Family procedures compared to baseline. Shaving and labeling feelings maintained at high levels during follow-up. The multiple baseline design provides reasonable control for threats to internal validity. Thus, it

appears reasonable to conclude that Teaching-Family procedures produced Bob's increase in skills.

The study adds to the few TFM studies documenting skill acquisition by persons with intellectual disabilities. The study also documents long term maintenance of skills acquired through Teaching-Family procedures. The study contributes to the broader literature and the positive behavior support literature in particular, by providing an example of skill acquisition by a person with a lengthy history of severe aggression. The findings document that skills can be acquired by a person with intellectual disabilities who displays extremely challenging behaviors.

The question arises as to why Bob's shaving and labeling feelings maintained, while "identifying and using numbers" did not. The current study does not allow for formal analysis of why shaving and labeling feelings maintained while identifying numbers did not. One might speculate, however, that the presence of sustainability factors may have influence the maintenance of outcomes. In her review Scheirer (2005) identified factors that may be associated with sustained outcomes. One of these factors, "the procedures provide or are perceived to provide benefits to participants, implementers and other stakeholders" is relevant to the current study. Readers may recall from Chapter 2, that the team hypothesized that one of the functions for Bob's aggression was to escape or avoid criticism regarding his appearance. Bob may have continued shaving because it served to help him avoid criticism while evoking positive comments from teachers and friends.

A second sustainability factor identified by Scheirer (2005) was "the presence of a Champion to support use of the procedures." Anecdotal reports indicated that a high level agency administrator was particularly concerned about the appearance of the people served by the agency when they appeared in the community. She was known to praise teachers who accompanied persons who were neat and clean and to fiercely criticize staff who accompanied a person served who appeared in shabby attire or who was unshaven. It is possible that the application of social approval or disapproval by this "Champion" served to maintain teacher implementation of the procedures which in turn resulted in maintained outcomes.

Conversely, the skill "identify numbers" may not have produced benefits for either Bob or his teachers. Bob's could use the "add minute" button on the microwave in lieu of cooking. Teachers reported entering the phone numbers of Bob's friends into his phone so he could use "speed dial" by learning the location of each friend's number on the phone. Because Bob had other means by which to accomplish what he wanted, using numbers may not have been functional for him. In addition, no one appeared to "Champion" Bob's use of numbers. The above "assessment" of the reasons for the maintenance or non-maintenance of Bob's skills is of course only speculative. Future research might experimentally analyze factors that contribute to treatment fidelity and maintenance of outcomes.

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Chapter 5

Developing a Sustainable Intervention for a Child with Developmental Delays

Author's note: A version of the research appearing in this chapter appears in:

De Wein, M., & Miller, L.K. (2008). The Effect of a Teacher Report on the Sustainability of an Intervention to Facilitate Engagement by a Child with Developmental Delays. *Education and Treatment of Children,* 31, 333-350.

The research described in this chapter took place in an inclusive community-based early education centre. The school had virtually no funding for training or consultation. The oversight that was possible in prior research (described in previous chapters) was not possible. Thus, while the reduction of challenging behavior is one element of the study, the primary focus of the following study is on the sustainability of the procedures.

"The long-standing gap between research and practice in… education is a matter of national concern." (Abbott, Greenwood, Tapia, & Walton, 1999)

Applied behavior analysis has demonstrated the effectiveness of numerous interventions capable of solving a vast array of behavioral problems. Unfortunately these interventions are not widely used in applied settings (e.g., Greenwood & Abbot,

2001; Witt, 1986). In fact, local providers often do not continue to use them in the applied settings where their effectiveness was initially demonstrated (Baer, 1989). One might speculate that if the use of an intervention is not sustainable after its introduction to a setting, it is unlikely to be adopted by other settings (Baer, 1989). Applied behavior analysis may have to develop new methods to reduce this gap between research and practice. A good place to start might be to understand the factors that promote the sustainability of an intervention.

Fixsen, Naoom, Blasé, Friedman and Wallace (2005) reviewed the literature relating to the sustainable implementation of evidence-based interventions in non-research settings. They identified 743 articles related to the issue. The articles covered education and human services, agriculture, business and engineering. They found only 20 experimental studies using within-subjects or randomized group designs. Among their conclusions Fixsen and colleagues asserted that dissemination of information alone does not necessarily result in sustainable and effective interventions. Their broader conclusion was that a science of implementing evidence-based interventions with fidelity and good outcomes for consumers is needed.

In a comprehensive review of experiments on teacher use of behavioral interventions, Rose and Church (1998) reported that only 20 out of 49 studies reported follow up data. They found that only 8 studies reported maintenance and that the median follow up interval was 5.5 weeks. None of the studies analyzed the conditions that produced maintenance. Rose and Church's findings suggest that

closing the gap between research and practice may require the development of a science of sustainability.

Researchers have begun to wrestle with how to promote sustainability. Greenwood and Abbot (2001) recommended adding systematic consultation to promote the sustainability of behavioral interventions in schools. Sanetti, Louiselli and Handler (2007) found that consultant feedback improved the implementation of a behavior support plan in an elementary school. A problem with the consultation model of sustainability is that the continued involvement of the consultant is required. In turn, sustained consultation may require an organization that trains and monitors the consultant. Finally, the organization that trains and monitors the consultant must be sustained.

An alternate approach, for which there is little systematic research, is to examine teacher use of procedures in the absence of ongoing researcher support (Baker, Gersten, Dimino & Griffiths, 2004).Toward this end it may be useful to focus research on a much narrower task: understanding the variables that promote the sustained use of evidence-based interventions in a single classroom. Such research might analyze the effects of a single variable on the sustained use of an evidence-based procedure to help one child with one particular behavior. This might be followed by replications of the experiment with several children to examine the generality of the findings. Such small scale experiments have been the backbone of applied behavior analysis research.

The following is an analysis of the effects of a teacher report designed to provide information to a parent on teacher use an effective behavioral program. The case involves Timmy, a four year old boy with developmental delays. The research team observed that Timmy remained almost totally disengaged from his pre-school environment. While disengaged he often emitted aberrant behavior. The team's goal was to develop a sustainable intervention to be used by the teachers to increase Timmy's engagement. We use "sustainable" to mean that the teachers would continue to use the intervention in the natural conditions prevailing in the absence of the research team.

The purpose of this study was to analyze the effects of posting a daily teacher report on teacher implementation of a facilitation procedure. The facilitation procedure was designed to increase the engagement of a 4 year old boy with developmental delays. In order to predict the effect of the report on the sustainability of the facilitation procedure, the study was conducted under simulated naturalistic conditions. Supplementary data describes the effectiveness of the intervention on child engagement and aberrant behavior. Another set of supplementary data describes the teachers' continued use of the intervention after departure of the research team.

Method

Participants and Setting

The client was a four-year-old boy with developmental delays and limited communication skills. The primary caregivers consisted of one full-time lead teacher

and one part-time teaching assistant. The study took place during free-play in an inclusive, cooperative preschool serving about 20 children. The preschool facilities consisted of a schoolhouse and playground used for free play.

Covert observations took place through several open windows overlooking the playground. The child was usually close enough to the windows to permit the researcher to overhear verbal interactions with the teachers. Observations took place during free play and did not interfere with child participation in school activities. The windows were frequently used by parents and visitors to watch activities on the playground thus obscuring the gathering of data by the observer. A parent signed an informed consent form agreeing to researcher use of child data. The parent was aware of the purpose of the study. Teachers consented to data collection on teacher implementation of facilitation procedures. Teachers were informed that the purpose of the study was to understand the conditions under which facilitation was most likely to occur. They were not, however, informed that use of the teacher report (see below) would serve as the independent variable until after the study.

Definition of Teacher Facilitation:

Teacher facilitation was defined as the teacher using one or more of the following during 10 one-minute intervals: a) least intrusive prompt sequencing, b) praise (DiCarlo & Reid, 2004), c) redirection (Ahearn, Clark, MacDonald, & Chung, 2007), d) incidental teaching (McGee, Krantz & McClannahan, 1986), e) differential reinforcement (Wilder, Harris, Reagan & Rasey, 2007), f) words signs or pictures known to the child,

g) recruiting play partners, and h) directing play activities. **Table D** below provides additional details.

Table D: Facilitation Procedures

1) Using a prompt:
    a) Teacher uses verbal, gestural and/or physical prompts (this includes "pre-teaching" and "preventative prompts" see Appendix D).
    b) Note: Teachers scored use of signs or augmentative devices as communicating
2) Communicating with words, signs and augmentative devices:
    a) Teacher initiates use of words, signs or augmentative device
    b) Teacher behavior corresponds to child initiated communication
3) Praising: Teacher praises child orally or by sign (in conjunction with Teaching-Family procedure "effective praise.").
4) Redirecting: Teacher directs child's attention to alternative activity through prompts
5) Differential reinforcing: Teacher ignores inappropriate behavior and attends to appropriate behavior (praising the appropriate behavior using TFM "effective praise" as noted above).
6) Recruiting play partners: Teacher beckons or escorts partner or escorts child to partner.
7) Directing play activities: Teacher uses prompts, instructions (skill acquisition procedures see Appendix E), modeling and praise to evoke an activity.

Notes on Procedures: The researcher used Teaching-Family skill acquisition procedures (see Appendix E) to teach the child functional behaviors such as how to appropriately use work and play materials prior to the study (ie. during preparation). Verbal de-escalation procedures (see Appendix D), problem solving and body basics were not used with the child before or during the study. The treatment fidelity procedures described in this study were used in lieu of the treatment fidelity procedures developed for use in the studies involving Bob. **Table E** details the range of procedures used prior to and during the study.

Table E: Procedures for Child with Low Engagement

Components Elem	ents	Present
Community-Based	Access to local schools, recreation etc.	Yes
Self-Determination Daily	Meeting	No
	Structured Peer Feedback	No
Making	Choices	Yes
Relationship Development	Group Activities	Yes
	Time w/preferred persons	Yes
Individual	time w/staff	Yes
Service Continuum	Universal: schools	Yes
	Specialized: General T-F Curriculum	No
	Individualized T-F Curriculum	Yes
Individualized	education, quality of life	Yes
	or other plan	
Skill Acquisition and Teaching Procedures	1,2, 3 Skills Assessment	Yes
Motivation	System*	Yes
Pre-Teach	ing	Yes
Preventa	tive Prompting	Yes
Teaching	Interactions	Yes
	Seven Phases of Skill Acquisition	Yes
Verbal	De-escalation	No
Problem	Solving	No
Body	Basics	No
Professional Development	Off-site pre-service workshops	No
	Off-site in-service workshops	No
On-site	training	Yes
Consultation		See text
Teaching-Fam	ily Certification	No
Additional Non-Standard	Functional Behavioral Assessment	Yes
	Least Intrusive Prompting, Redirection, Facilitation Procedures, and Sustainability Testing (including daily report)	Yes

* modified to include only differential reinforcement of positive behavior through contingent attention or access to preferred items and activities.

Definition of Child's Response

Child engagement was defined as the child emitting one or more of the following behaviors for at least 40 seconds of each of 10 one-minute intervals. (a) cooperative or parallel play with other children, (b) playing alone by manipulating an object in a fashion typical for the object, (c) using words, pictures or signs to communicate, (d) walking directly from one play structure to another while maintaining upright position, or, (e) playing with, accompanying or following instructions from an adult. If the child's engagement started or stopped within an interval, the researcher noted the number of seconds into the interval that the change occurred to permit determining the total number of seconds of engagement for each interval.

On limited occasions the child was too far from the observation window for the researcher to hear the specific vocalization emitted by the child or the specific instructions given by the teacher. Therefore, the researcher could not record the specific facilitation procedure used by the teachers for 10% of the intervals. No observations were recorded on days that the child's parent was present as a volunteer. The observer simultaneously recorded teacher facilitation and child engagement for the same set of 10 one-minute intervals.

Reliability data for facilitation were collected at least once in each condition for 20% of the sessions including the Paraprofessional Follow Up condition. Agreements were scored only if both observers agreed that a facilitation procedure had been used but the reliability observer was not required to specify the procedure used. Agreements and disagreements were recorded for each of the ten intervals during a session. Reliability ranged from 60% to 100% and averaged 80%.

Reliability data for engagement were collected for 20% of the sessions using a second independent observer. At least one reliability check occurred during each experimental condition and the Paraprofessional Follow-up condition. Interval-by-interval agreements were counted for ten one-minute intervals per session. Reliability ranged from 70% to 100% and averaged 92%.

T*eacher Report*

During each day teachers recorded a detailed but low effort report with information about the child's day (see Table F). The teachers circled (a) play activities by the child, (b) activity centers chosen, (c) planned and incidental activities, and (d) typical pre-academic and play activities in which the child participated. In addition teachers listed (e) the names of children, teachers, and parents with whom the child played and (f) new skills emitted. At the end of the day, the teachers posted the report where the parent could read it. The parents were invited to use the report as the basis for routine communications with teachers.

Fidelity of Reports:

The researcher covertly looked for the completed report during every session. He found reports for every session during the Reports conditions. No reports were found for the No Reports condition. He also found completed reports during each covert visit during follow up conditions. Completion and posting of the report was 100% for all sessions. The researcher covertly examined the reports periodically and found that they reports were highly accurate.

Table F: Teacher Report Form

CHILD'S DAILY ACTIVITY SHEET *(Be sure to initial the information you input)*

PLAY ACTIVITIES: Castle/tiny Slide, Yellow Slide, Basketball, Tunnel, Cargo Net, Lemonade Stand, Play House, Sandbox, Swings, Green Slide, Cabin, Rings, Jungle Gym, Picnic, Bike, Blue Steering Wheels, Airplane,
Other:_____
I played with:
_____
Communications: Let's Play, My Turn, Go, Spin, Help, Other:_____

CENTERS: I chose: Books, sensory table, Play Dough, Art, Writing, Puzzles, Magnets, other:
_____
Something really neat that I did was:
_____

SHOW & TELL: I participated by:
_____

SKILLS: stay on feet, initiate play, join play, share, take turns, climb
I played with:
_____

BIG NEWS!!! Today I…(new words or phrases, signs, progress on skill acquisition, new friends, you name it!!!

Experimental Conditions

Report: The Director placed a blank report form and pen on a designated table at the beginning of each day for eight sessions. The form is a variation of the widely used Daily Behavior Report Card that we call a "Teacher Report" (Chafouleas, Riley-Tilman, & Sassou, 2006;) The reports were supplied by the researcher. With the mother's permission, the researcher told the staff that the child's mother had requested that they record the child's engagement on the form.

No Report: The researcher did not supply blank reports to the Director for six sessions. He explained to the teachers that his aging laptop computer would not permit transfer of the file containing the report.

Reversal to Report: The researcher again supplied blank reports to the Director who placed them on the designated table for four sessions.

Teacher Follow-up: The researcher supplied a Word file containing the report and told the Director she should feel free to continue using the reports if she felt it helped the child and the teachers. The researcher returned to the pre-school to observe four sessions during five weeks.

Paraprofessional Follow-up: The school district hired a paraprofessional to provide support in the classroom. The district requested that the paraprofessional be trained in the facilitation procedures and in the use of the teacher report form. The school district modified the report form by adding a carbonless copy. One copy would be for the Mom to take home and one was for the school. The researcher returned to the pre-school to observe five sessions from weeks eight through 47. Thus a B-A-B-B'-

B" reversal design was used. After the paraprofessional was trained, the researcher withheld feedback for using the facilitation procedure or the report for the duration of the study.

Notes on Experimental Design:

The experiment included five conditions including pre-experimental preparations.

Pre-Experimental Preparations: Four months prior to the study, the researcher developed and implemented the facilitation procedure. The facilitation procedure was designed to increase child engagement and decrease aberrant behavior Interviews with teachers and parents combined with the interviews, written narratives, and informal observations of school-district personnel suggested that the facilitation procedure was effective.

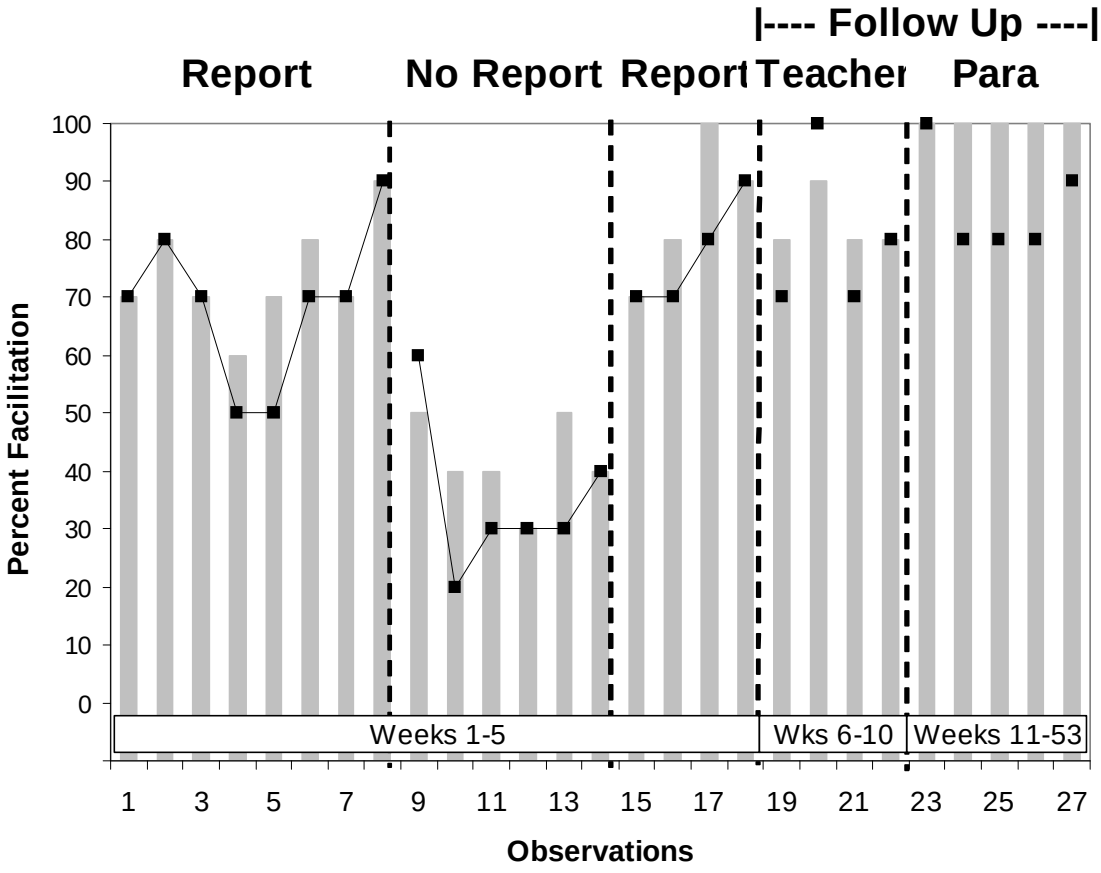
Two months before the study, the parents, school district and teachers asked the researcher to train the teachers in the use of the facilitation procedure. Training occurred at the child's community pre-school. Training included verbal instructions, limited written instruction, modeling, practice and verbal feedback. Teachers practiced the facilitation procedure until child engagement was 70% or higher across two 10-minute sessions. Parent reports combined with the informal observations of both the researcher and school district personnel indicated that child outcomes varied as a function of teacher implementation. Further, teacher implementation appeared to depend on feedback from the researcher. The parents were aware that the researcher

would soon be leaving the setting. The parents asked for assistance in determining the conditions under which outcomes for their child might be likely to sustain.

The problem was determining how to maintain use of the intervention in the absence of researcher support. The first step then was to develop a method for observing teacher use of the facilitation intervention in the absence of researcher support. The team adopted what has been called "sustainability testing" (Miller, et al, 2005). Sustainability testing involves changing the typical relationship between the research team and organizational staff. During sustainability testing researchers refrain from any support behaviors that might encourage use of the behavioral intervention under study. The rationale for withholding researcher-provided support behaviors is that those behaviors will not be available from the researchers after they leave the setting (e.g., Hall, 1991). Withholding support behaviors creates naturalistic conditions (cf. Luiselli, 1984) that simulate what happens after the research team departs. Thus, during the study the researcher did not provide feedback to teachers regarding their implementation of the facilitation procedure.

Results

Figure 6 shows the effects of the report on teacher facilitation. During the initial Report condition teacher facilitation averaged 69% with an upward trend. During the No Report condition teacher facilitation was lower averaging 42%. During the reversal to Report, teacher facilitation averaged 78% with an upward trend. During the five-week Teacher Follow-up condition with the report in place, facilitation averaged 80% and ranged from 70% to 100%. During the 43-week



Paraprofessional Follow-up condition with the report in place facilitation averaged 85% with a range of 80% to 100%. Thus, facilitation was higher during all teacher report conditions including the two follow up conditions.

Supplementary data were gathered on the percent of intervals containing child aberrant behavior such as eating non-edibles (usually rocks) or flailing his arms thereby knocking over other children's play materials or knocking over unattended play/learning materials. Aberrant behavior occurred in 11% of the intervals during the first Report condition, rose to 37% of the intervals during No Report and fell to 3% of the intervals during reversal to the Report condition and Follow up.

Discussion

This experiment analyzed the effect of posting a report on teacher use of a procedure to facilitate child engagement. The rate of facilitation was higher during both Report conditions than it was during the No Report condition. The fact that the rate of facilitation decreased when the report was removed and then increased when it was reinstated suggests that other unknown factors were not responsible for the changes. Therefore, it is reasonable to conclude that the report produced the increase in teacher facilitation

Results indicate that the rates of child engagement were high when teacher facilitation was high and low when teacher facilitation was low. In fact, detailed examination of the observation records reveals that teacher facilitation accompanied or preceded 93% of all intervals of child engagement. This suggests that teacher facilitation caused the increase in child engagement. Results also indicate that when child engagement was high, aberrant behavior was low. This suggests that the decrease in aberrant behavior resulted from the increase in child engagement resulting from teacher facilitation.

The fact that the increase in facilitation was observed during simulated post-researcher conditions predicts that the report would continue to be effective during follow up observations after the researcher had actually left the setting. This suggests that the facilitation procedure combined with the report was sustainable in non-research conditions.

It is worth noting that sustainability of the facilitation procedure in the present experiment may have ultimately depended on the sustainability of the report. The parent's reading of the report and mention of it in conversations with the teaching staff may have contributed to the Director continuing to place the form on the table and to the teachers continuing to fill it out. Apparently use of the report was itself sustainable.

A limitation of the current experiment is that the B-A-B design did not permit the formal assessment of the initial baseline level of teacher and child behavior. However, the report condition was introduced because teachers had not been facilitating often enough to maintain a high level of child engagement prior to the experiment. Thus, while we can not present formal data on the initial baseline level, informal observations indicated that baseline levels of teacher facilitation and child engagement were low and comparable to the level observed in the No Report condition. The informal baseline could not be extended so as to permit formal observation for two reasons. First, the researcher started a new job in 21 days. Second, the parent requested that the child be exposed to a minimum of low teacher facilitation. Future research should gather systematic data to establish an initial baseline.

Another limitation of the present study is computation of reliability on the observation of teacher use of a facilitation procedure without obtaining reliability on the specific facilitation procedure implemented by the teachers.

The experiment demonstrated that behavior analysts can withhold researcher supports to create a valid simulation of naturalistic conditions. Validity was established in two steps. First, the report was shown to be effective at maintaining teacher use of the facilitation procedure under *simulated* post-research conditions. Second, the package was shown to be effective at maintaining teacher use during *actual* post-research conditions. Thus the effectiveness of the report during the simulated post-research conditions accurately predicted its effectiveness during the actual post-research conditions. This consistency suggests that the simulation was valid. Furthermore, it replicates the accuracy of similar predictions in a cooperative dormitory (Welsh, Miller & Altus, 1994; Altus, Welsh & Miller, 1991).

An interesting implication of the present experiment is that developing a sustainable intervention may be a crucial step in getting it adopted in a non-research setting. In the present study the report and the training protocol for the facilitation procedure were adopted for use in other settings by the Training Coordinator for Early Childhood Special Education for the local school district.

The present results suggest that the use of sustainability testing and the involvement of consumers such as parents may offer a viable strategy for developing behavioral interventions that will be sustainable under non-research conditions. However this experiment leaves important questions unanswered concerning the mechanism responsible for the effect, the generality of this approach to other interventions, settings, clients and parents or the impact of the many contextual

factors involved. Considerable future research will be required to answer these questions.

Future research should clarify the mechanism by which the sustainability package produced its effects on teacher behavior. The present experimental design did not definitively rule out the possibility that simply filling out the report may have maintained teacher use of the facilitation procedure. However, staff self-recording in other settings has usually required continued supervision to maintain use of self-recording and use of the behavioral intervention that is being self-recorded (e.g., Kissel, Whitman & Reid. 1983). This issue could be clarified by comparing filling out the report alone with filling out the report and posting for the parent.

Future research should clarify the possible role of the parent in making the sustainability package effective. This possibility is consistent with informal observations of the parent reading the report and then using that information to provide differential feedback to the parent. Future research should formally observe parent behavior to determine if differential feedback based on the report is the mechanism underlying the results of this experiment.

Future research might also examine the role of the partnership with the parent created by the report. The report allowed the parent to see the extent to which the teacher was teaching the agreed upon target behaviors. The report may also have reduced confusion about new target behaviors by requiring the parent to request that such behaviors be added to the report. The effect of the partnership may be to increase positive socials and decrease aversive socials between parent and teacher

which could contribute to the sustainability of the procedure. A broader question is whether behavioral procedures can be developed to create a partnership with consumers other than parents.

Future research might also examine the role of reduced effort in the success of the sustainability package. Informal observations suggest that use of the report may have saved teachers time by providing the parent with information that they otherwise could receive only by talking with the teacher. The report may also have simplified the collection of individualized data by combining it with the usual generic pre-school home report. Since all behavioral interventions require effort on the part of the service provider, clarification of the effects of different levels of effort on sustainability would help in the design of interventions.

Future research should examine whether behavior analysts can withhold researcher supports to create valid simulations of naturalistic conditions for other settings. Attempts to replicate these results in a variety of other applied settings would clarify the generality of this method.

As these comments have illustrated, future research is needed to understand the generality of the present research. Additional research must clarify a variety of issues such as the mechanism by which the report sustained teacher facilitation, the role of the parent, the importance of reduced effort for the teachers, the possibility of creating a partnership with the parent and use of the method of simulating naturalistic conditions in other settings.

In summary this study analyzed the effect of a teacher note on teacher use of an effective intervention that increased engagement while decreasing aberrant behavior. It demonstrated that the report could maintain use of the intervention under non-research conditions where no consultation or other research support was available. Future research on the use of such reports to involve parents and others in sustaining evidence-based behavioral interventions may contribute to closing the long-standing gap between research and practice noted by Abbott et al, (1999).

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Chapter 6

Reducing the Injurious Aggression of Five Children in an Inclusive Early Education Program

Author's note: A version of the work appearing in this chapter appears in:

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Alink et al. (2006) documented that aggression begins as early as 12 months and accelerates until age three at which time aggression typically begins to decline. In a prior study, Tremblay et al. (2004) reported similar findings noting that children appear to learn to regulate the use of physical aggression during the pre-school years. Failure to regulate aggression during the pre-school years, according to Tremblay et al., places children at high risk for displaying serious violent behavior during adolescence and adulthood.

Numerous studies confirm the relationship between aggression and peer rejection, academic failure, depression, substance abuse, early pregnancy, delinquency, and adult criminal behavior (Campbell, Spieker, Burchinal, Poe, & the NICHD, 2006; Engels, Vermulst, Dubas, Bot, & Gerris, 2005; Fite, Colder, Lochman, & Wells, 2007; Huesmann, Eron, & Dubow, 2002; Muntaner et al., 1989; Patterson, De Baryshe & Ramsey, 1989; Serbin, Peters, McAffer, & Schwartzman, 1991).

Due to the troubling implications of leaving aggression untreated researchers have emphasized the need for early intervention (Fergusson, Horwood, & Ridder 2004; Loeber & Farrington, 2000; Scholer, Reich, Boshers, & Bickman, 2005; Webster-Stratton & Taylor, 2001; Wentzel & Wigfield, 2007).

An additional result of aggression may be injury to other children. Turner, Snow, and Poteat (1993) surveyed over three thousand day care centers in North Carolina and reported that aggression was a factor in approximately 10% of injuries. More recently, researchers have emphasized the need to track injuries and to prevent injuries stemming from causes amenable to invention such as aggression (Borowsky, Mozayeny, Stuenkel, & Ireland, 2004; Olsen, Hudson, & Thompson, 2008).

Teaching-Family procedures may be effective for reducing aggression- related injuries suffered by pre-school children. Teaching-Family researchers and professionals have provided services to children with a mental age of five years (McGee, Krantz, Mason, & McClannahan, 1983), with children with a chronological age of four years (Fabry, Reitz, & Luster, 2002) and even with children as young as 2.5 years (Ruma, Burke, & Thompson, 1996). These reports suggest that Teaching-Family procedures are appropriate for use with young children.

Teaching-Family research on aggression suggests that Teaching-Family procedures reduced the aggression displayed by group home youth (Field, Nash, Handwerk, & Friman, 2004b; Phillips, 1968), the frequency of crisis teaching episodes in reaction to extremely challenging behaviors such as aggression (Field, Nash, Handwerk, & Friman, 2004a) and reduced parent/caregiver perceptions of

aggressive behaviors displayed by group home youth (Larzelere et al., 2001). Teaching-Family procedures reduced staff use of restraint (Jones & Timbers, 2003), the number of days spent in inpatient care by youth for whom aggression was a referring factor (Fabry, Reitz, & Luster, 2002) and disruptive behaviors, including aggression, displayed by an adult with intellectual disabilities living in a group-home (Reese, Sherman, & Sheldon, 1998). As described in Chapter 1, Teaching-Family procedures reduced aggression-related injury reports involving three violent juvenile offenders living in a group home. As described in Chapter 2, Teaching-Family procedures reduced the rate of aggression displayed by two adults with intellectual disabilities. Supplemental data revealed that post-insurance costs for staff hospitalizations resulting from the aggression of one of the participants declined from nearly $18,000 to zero following treatment. Taken as a whole, this evidence-base suggests that Teaching-Family procedures might be effective for reducing aggression-related injuries displayed by children in an inclusive early education centre.

The Teaching-Family Model: Limitations and the Current Effectiveness Trial

While the above studies are encouraging, they have limitations. In the studies that included pre-school aged children (biological or mental age), aggression was either not a referring factor (Fabry, Reitz, & Luster, 2001; McGee, Krantz, Mason, & McClannahan, 1983) or the researchers did not present individual aggression data (Ruma, Burke, & Thompson, 1996). Thus, it is unclear if Teaching-Family procedures are effective for treating early childhood aggression. The study described

in Chapter One appears to be the only Teaching-Family study in which injurious aggression was measured in isolation from aggression of other intensities. Crocker et al. (2006) asserted that measurement of specific intensities of aggression might lead to a better understanding of factors associated with onset and may aid practitioners in treatment selection. Finally, if early educators will faithfully implement the procedures over an extended period-of-time remains unknown.

The purpose of the current study was to examine the effects of an intervention anchored in Teaching-Family procedures on the number of aggression-related injury reports involving five pre-school children before and after intervention. A second purpose was to determine if early educators would maintain implementation of the procedures with fidelity. A tertiary purpose was to explore parental perceptions of the impact of child aggression on the home environment before and following treatment. Finally, the study details efforts to sustain a developing program.

Method

Setting

The setting was an independent community-based inclusive early education program located in a low-income and historically underserved area. The program did not refuse services to children based on the severity of intellectual disability, physical disability (provided the child did not require extensive medical treatment) or severity of problem behavior identified by referring agents. Hereafter, we use the term "The Centre" to refer to the program. The Centre served approximately 60 children and

was under the umbrella of a larger service organization that served approximately 550 children in 18 locations.

Teachers had a bachelor's degree in human development, an early education certificate, or were in the process of completing an early education certification at a nearby college. Teacher experience ranged from 4 to 11 years with a minimum of three years in an inclusive or special education classroom. The Centre director was a former special education teacher with ten years experience working in settings serving children with special needs. The intervention was delivered in four interconnected teaching areas separated by a four foot partition. Staff to student ratio was one to four.

The executive director of the umbrella organization hired the first author on a fee-for service referral basis. He had previously served as a Teaching-Family consultant, trainer, and evaluator at a certified Teaching-Family sponsor site. The executive director was a former Teaching-Family teaching-parent and program director.

Participants

Any child for whom injurious aggression was a referral factor during a one-year period was included in this study. The executive director of the umbrella agency, the Centre IRB/HRC and the IRB of the university with which the authors of the current study are affiliated all approved the study.

Five children, Abraham, Alistair, Cameron, Elle, and Alexis, ages four to five years, participated. The children have been given fictitious names to protect their

identity. All parents reported aggression at home prior to the intervention. All parents, except Elle's, reported that they had enrolled their child at the Centre because prior agencies or caregivers had ceased services due to aggression.

Two children had physical disabilities. Abraham had a severe hearing impairment. Alistair had a severe visual impairment. One child, Cameron, had a label of "suspected severe mental retardation." Two children, Elle and Alexis, had no identified disabilities.

Allied professionals serving Abraham and Cameron had ceased services citing aggression as the cause. Allied professionals serving Alistair were threatening to cease services.

Prior to the intervention, injury reports revealed that the children had participated in a variety of injurious aggression. Incidents included but were not limited to: Biting breaking the skin, striking another child on the head with a wood block resulting in stitches, striking another child in the face with a wood block knocking out one of her permanent front teeth, assaulting a teacher with a chair rendering her incapacitated and boxing another child's ears causing them to bleed.

Measures

Injury Reports. The primary measure was the number of aggression-related injury reports filed by teachers involving each of the five children. The reports and accompanying documentation were similar to those used in related studies (Bjorkdahl, Heilig, Palmstierna, & Hansebo, 2007; Omerov, Edman & Wisted, 2002; Peterson, Dilillo, Lewis, & Sher, 2002). Injury reports contained information such as

the location and description of the injury, the type(s) of medical treatment given, the time of day, the persons involved and the circumstances under which the injury occurred. Teachers determined an injury to be aggression-related if the student had done any of the following to another person: hitting, kicking, biting, shoving, elbowing, wrestling, or other purposeful forceful contact (as judged and detailed by the teacher both on the injury report and on a subsequent functional behavioral assessment/A,B,C report). For purposes of the current study, the child's actions must have produced a clearly discernable cut, bruise, scrape, puncture wound, knot, handprint or other mark.

In order to assure consistent reporting teachers received pre-service and in-service instruction on proper use of the injury reports by the training staff of the umbrella organization. The on-site nurse's separate report of medical action taken accompanied each injury report. The nurse's report included confirmation that there was physical evidence of injury. In addition, each injury report was accompanied by an A,B,C report (described in procedures section below) completed by the teacher. The A,B,C report detailed the specific circumstances leading to and prevailing after the injury occurred. Finally, a written summary of the action taken by the Centre director regarding the incident that led to injury accompanied each injury report. . Results for aggression-related injury reports appear in Figure 7.

Parent Report of Child Aggression at Home. Prior to and following the intervention, parents of participating children completed a questionnaire developed by the researchers. Parents were asked to rate the severity of their child's aggression at

home on a scale ranging from zero to three. In addition, parents responded to nine "yes or no" questions designed to explore parental perceptions of the impact of child aggression on the home environment (e.g., "In your opinion, have family members or other caregivers missed a day or stopped taking care of your child altogether due to aggression?"). An administrative assistant made the questionnaire available to parents. She read a prepared script informing parents of the rationale for the questionnaire ("to gain a better understanding of your child's behavior at home and the possible impact of any aggression that may occur."). Parents were not aware that the researchers developed the questionnaire. Before and after results of the parent survey appear in Tables C and D.

Teacher satisfaction. Teachers completed a satisfaction survey designed by the umbrella agency following the intervention. The survey was designed to measure teachers' satisfaction with a continuum of Centre related services for staff. The three items that pertained directly to the study related to teacher satisfaction with 1) "the amount of work involved relative to the gain", 2) "the overall usability of the procedures" and 3) "whether using the procedures makes a positive difference for the child." Teachers rated each item on a Likert-like scale with response options ranging from "1" (*Completely Dissatisfied*) to "5" (*Completely Satisfied*).

Treatment fidelity. The Centre Director and researcher collected treatment fidelity data. Independent observations occurred a) within the teaching areas, b) looking over a four-foot partition into the teaching areas or, c) on the playground. Fidelity checks occurred at least once every two weeks.

Treatment fidelity was calculated by dividing the number of procedures completed (range 0-11) by the total number of procedures on the checklist (11). Criteria were nine or higher (82%) from the list appearing below. Teachers met criteria for the duration of the study with the exception of one week for a single child. Note: procedural details with examples appear in Tables 1 and 2 and in the procedures section.

1) Provide opportunity to use at least one targeted curriculum skill. 2) Provide *effective praise* for child's performance of targeted curriculum skill(s). 3) *Pre-teach* during identified pre-cursor/stimulus situation(s) from A,B,C report. 4) Use *preventative prompts* during identified pre-cursor/stimulus situation from A,B,C report. 5) Use *teaching interactions* to address inappropriate behavior (for which the team identified a positive alternative target behavior). 6) Use complete teaching (omitted no more than one of step of effective praise, teaching interaction, or skill acquisition procedure). 7) Provide reinforcement according to child's treatment plan, 8) State and provide opportunities for positive correction (*planned-spontaneous* skill acquisition procedure) for behavior previously addressed with a teaching-interaction. 9) Use *body basics* (neutral or positive voice tone, facial expressions etc.). 10) Use *extended teaching* appropriately (transition from teaching interaction to verbal de-escalation when child out of instructional control/does not positively respond to two teaching interactions in succession, teacher avoids comforting or counseling when child displaying inappropriate behavior, uses majority of verbal-de-escalation steps). 11) Use *S.O.D.A.S.* to assist in decision-making/choice.

Reliability for treatment fidelity was calculated by dividing the number of agreements by the number of agreements plus disagreements and then multiplying the value by 100%. Agreement on fidelity checks made by the researcher and Centre Director ranged from 73% to 100% and averaged 92%. Thus, the reliability of the fidelity checks was high. The 73% check occurred during the second week of the intervention with Abraham. A subsequent check during week 2 with Abraham was 91%.

Procedure

Intervention Procedure. Functional behavioral assessment, least intrusive prompting, redirection and sustainability planning were added to standard Teaching-Family Components and Elements. **Table G** details the procedures used in the current study. Additional details follow.

Table G: Procedures with Aggressive Children in an Early Education Centre

Components Elem	ents	Present
Community-Based	Access to local schools, recreation etc.	Yes
Self-Determination Daily	Meeting	No
	Structured Peer Feedback	No
Making	Choices	Yes
Relationship Development	Group Activities	Yes
	Time w/preferred persons	Yes
Individual	time w/staff	Yes
Service Continuum	Universal: schools	Yes
	Specialized: General T-F Curriculum	No
	Individualized T-F Curriculum	Yes
Individualized	education, quality of life or other plan	Yes
Skill Acquisition and Teaching Procedures	1,2, 3 Skills Assessment	Yes
Motivation	System*	Yes
Pre-Teach	ing	Yes
Preventa	tive Prompting	Yes
Effective	Praise	Yes
Teaching	Interactions	Yes
	Seven Phases of Skill Acquisition	Yes
Verbal	De-escalation	No
Problem	Solving	No
Body	Basics	Yes
Professional Development	Off-site pre-service workshops	No
	Off-site in-service workshops	No
On-site	training	Yes
Consultation		Yes
Teaching-Fam	ily Certification	No
Additional Non-Standard	Functional Behavioral Assessment	Yes
	Least Intrusive Prompting, Redirection and Sustainability Planning	Yes

* modified to include only differential reinforcement of positive behavior through contingent attention or access to preferred items and activities.

In order to detail the specific circumstances under which an injury occurred and to assess the function of aggression teachers completed an "A,B,C" report for each child. The report was nearly identical to the report used for Bob (as described in Chapter 2). The report detailed the antecedents, behaviors, and consequences related to the incident that resulted in injury. The purpose of the report was to assist in hypothesizing regarding the function of aggression for each child. If the team could generate a working hypothesis for the function(s) of aggression, the team might be able to identify appropriate alternative behaviors and /or reduce or eliminate the suspected pre-cursors to aggression. The reports contained the information described below.

Antecedents and Setting Events**:** identify the time of day, location, persons present and proximity of persons to the individual, activities/events going on earlier in the day, and, immediately prior to aggression. Did anything out of the ordinary occur earlier in the day or week? Did the child participate in his/her usual activities? Did the child take prescribed medication, if any? Has the child had any recent changes in medication including ingestion of non-prescribed medication? What was the child's emotional state earlier in the day and immediately prior to aggression? What other factors might have set the occasion for aggression?

Behavior**:** Describe the child's facial expressions, body language, and mood. What did the child say? Describe the child's physical actions (in words that can be acted- out, if possible). Include a description of the intensity of the behavior.

Consequences**:** What did the target of aggression do (both while being aggressed upon and immediately afterwards)? What did witnesses to the aggression do? What did the aggressing child do following the reaction of the victim and others? What did the teacher or other adult do? What did the child do in immediate reaction to the teacher's actions? List any other results of the aggression. List potential long term results of the aggression. What did the child gain by being aggressive?

As in the study in Chapter 1, teachers completed a Teaching-Family 1,2,3 Skills Assessment (Kirigin & Wolf, 1994) for each child. The 1,2,3 method involves the teachers and consultants/allied professionals developing a list of social, academic and self-help skills that are likely to be functional (and perhaps expected) in the setting in which the problem behavior occurs. Teachers then rate child use of skills from the list on a three-point scale. The purpose of the assessment is not to be a substitute for a full developmental or behavioral evaluation by an allied professional. Rather, the purpose is to involve teachers in understanding the child's strengths, framing the problem behavior, and committing to a plan of action.

Based on the A, B, C reports and 1,2,3 Skills Assessment the team (teachers, Centre Director and researcher) hypothesized regarding the function of aggression for each child. Illustrative examples for Alistair follow, but the process was the same for all children. The top five functions for Alistair appeared to be 1) to terminate aversive

auditory stimuli during naptime (for instance, the snoring of another child, running water, talking or music), 2) to terminate unsolicited assistance from others, 3) to terminate criticism, 4) to escape instructions and, 5) to access an item used by another.

The team used the results from both the A,B,C, and the 1,2,3, Skills Assessment to inform the selection of target skills for each child. For example, skills targeted for Alistair for hypothesis one (terminate aversive auditory stimuli) were reporting problems to teachers, using headphones and asking for assistance. Targets for hypothesis two (terminate unsolicited assistance) included reporting problems to teachers and communicating with other others. For example Alistair might sat, "I can do it" in response to unsolicited help. The positive alternative target for hypothesis three (terminate criticism) was accepting criticism. The positive alternative target for hypothesis four (escape instructions) was following instructions. The positive alternatives for hypothesis 5 (access item used by another) were asking permission, accepting the answer no, sharing, taking turns and joining play activities.

In order to assist the children in acquiring the behaviors identified by the team, teachers and the consulting researcher used a range Teaching-Family procedures. Examples from the current study for the procedures "effective praise" and "the teaching interaction" (Kirigin & Wolf, 1994; Phillips, Phillips, Fixsen, & Wolf, 1974) appear in Table 1. Examples from the current study for the Teaching-Family phases of skill acquisition (Kirigin & Wolf, 1994; 1987) appear in Table 2.

Additional Teaching-Family procedures included: 1) Preventative teaching (Schumaker, Phillips, & Braukmann, n.d.): a) pre-teaching: an advanced prompt for use of a positive alternative skill, b) preventative prompting: immediate prompt for use of a positive alternate skill, 2) problem solving/S.O.D.A.S: situation, options, disadvantages, advantages and summary (Willner, & Braukmann, 1987) and 3) extended teaching: verbal de-escalation (Kirigin, & Wolf, 1983a). Qualitative dimensions of teaching included eye contact, vocals, facial regard, body positioning and movement (Kirigin, & Wolf, 1983b). Readers interested in learning more about the Teaching-Family Model may go to http://www.teachingfamily.org/agencies.html for a list of Teaching-Family affiliated agencies.

General procedures used in the study included praise, differential reinforcement and least intrusive prompting.

Staff Training Procedure. Prior to treatment, the researcher provided approximately eight hours in pre-service training during which he reviewed basic behavioral principles and procedures and introduced Teaching-Family teaching procedures. Over the course of the first four weeks of intervention, the researcher provided approximately 39 hours of combined direct services, training and consultation. Consultation included verbal and written instruction, modeling, and performance feedback. During follow-up, the researcher provided an hour of consultation weekly.

Sustainability: Mancini and Marek (2004) observed that through advanced consideration of sustainability factors, a sustainability action plan emerges. In her

review of the literature, Scheirer (2005) identified five factors that influence sustainability. These factors included the program has a champion, the program goals and procedures are consistent with the organizations mission, the procedures are flexible, the program benefits (or is perceived to benefit) implementers, recipients and other stakeholders and finally, that stakeholders in other organizations provide support. The team considered the five factors identified above during the development of the intervention. Three of the five factors were already built-in.

The Centre Director championed the program by seeking out training and consultation services thus building the individual capacities of the staff, by providing favorable reviews of teacher efforts to the board of directors and by working individually with parents to address any concerns parent might have.

The goal of the procedures (to create a sustainable intervention that reduces injury and produces benefits to the child, teachers and parents) was consistent with the mission of the host organization (to create a violence-free environment in which individuals can be empowered to learn and succeed).

The intervention would be flexible. The teachers could adjust the frequency of teaching to target behaviors, identify and teach to new targets without a fundamental change in teaching procedures and use a continuum of procedures to respond to a continuum of child actions.

Based upon a review of Centre records, the observations of the staff and the researcher, and interviews with staff, the team determined that two sustainability factors needed to be improved. The two factors were "benefits to the children,

teachers, and the organization" and "support from stakeholders in other organizations."

The team believed that the procedures might increase benefits to the children, the teachers and the organization by reducing or eliminating injury to children and staff thereby reducing or eliminating the organization's potential liability and creating a more positive learning atmosphere (including increased child participation and engagement between children).

The team believed that support from stakeholders in other organizations would be indicated if allied professionals returned to provide services to participating children, if allied professionals established a partnership to improve co-ordination of services, if the local school district could be attracted as a community partner and if grant funding could be obtained to fund ongoing program development efforts.

Design

Data are presented in a partially non-concurrent multiple-baseline format. The partially non-concurrent multiple-baseline controls for history-effects that are not controlled for by a purely non-concurrent multiple-baseline and is suitable for use when ethical or other practical considerations do not permit treatment delay (Lumpkin, Silverman, Weems, Markam, & Kurtines, 2002). In Figure 1, dotted lines represent the changeover from "No TF" to "Teaching-Family" and the changeover from "Teaching-Family" to "Follow-up."

Baseline. "No TF" represents the frequency of aggression-related injury reports involving each child before participating in the intervention. Consistent with umbrella organization policy, teachers began data collection upon enrollment.

*Intervention***.** "Teaching Family" indicates when the child received individualized classroom-based treatment anchored in Teaching-Family procedures. Treatment began as soon as possible after referral. Teachers provided the majority of services. The researcher provided limited direct services, training and consultation.

Follow-up. "Follow-up" indicates when the researcher delivered no direct services. The researcher provided about an hour of consultation each week.

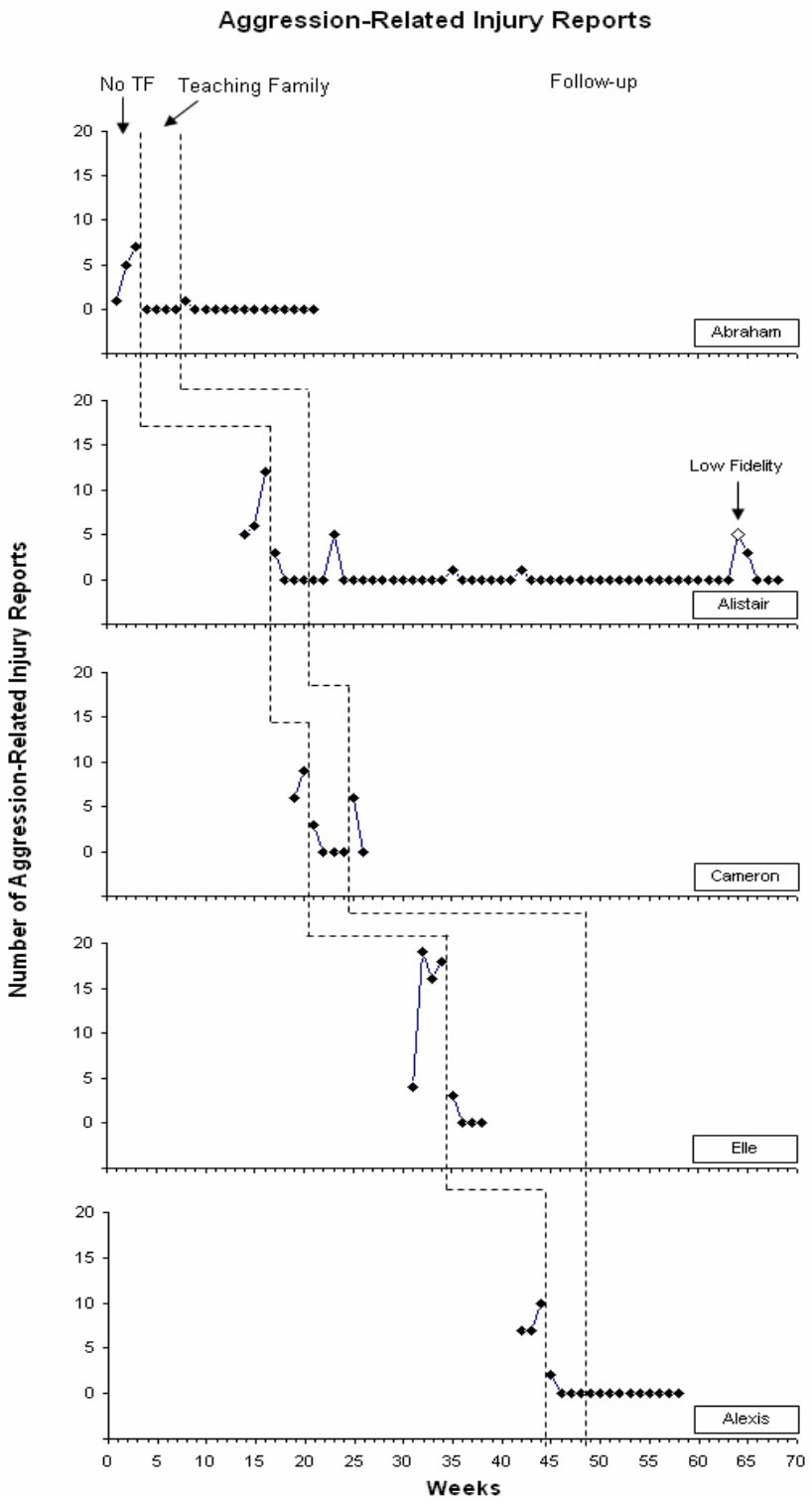
Results

Figure 7 shows the frequency of aggression-related injury reports involving the five children who received the intervention. The sum of pre-intervention aggression- related injury reports, across all participants, was 133. The sum of after-intervention reports across all participants was 29. Thus, the frequency of aggression-related injury reports involving the five children who received the intervention was 79% lower after the intervention compared to baseline. Outcomes for all children maintained during follow-up with the exception of one week for Cameron two weeks for Alistair.

Notes on Data: Data collection ceased for Abraham because he transferred to kindergarten. An unsolicited letter from his mother a year later informed us that Abraham had completed kindergarten. She reported that aggression was no longer an issue at school or at home. Data collection ceased for Cameron because his

grandmother agreed to resume his care. Elle's family moved the week following her last data point. Data collection ceased for Alexis because she was transferring to kindergarten.

Figure 7: Aggression-Related Injury Reports before and after TFM


Aggression-Related Injury Reports
No TF
Teaching Family
Follow-up
Low Fidelity
Abraham
Alistair
Cameron
Elle
Alexis
Number of Aggression-Related Injury Reports
Weeks
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70

Results from the parent survey appear in **Tables H and I**. All parent ratings of child aggression at home declined following the intervention (note: Elle's parents were not available to respond following treatment). Parents reported that most problems associated with aggression also declined following the intervention.

Table H: Questions 1-5 of Parent Survey

1) Does your child currently act aggressively at home? Please rate your child's aggression at home.

0) My child does not display aggression at home.
1) Mild (only occasionally and not worth monitoring)
2) Moderate (merits some concern and worth monitoring)
3) Severe (it is causing problems and something should be done)

	Pre Intervention	Post Intervention
Abraham	3	0
Alistair	2	1
Cameron	3	1
Elle	1	unavailable
Alexis	3	1

2) Have parents of other children (from home) talked to you or other of your child's caregivers about any aggression-related incidents in which that person judged your child to be at fault?

	Pre Intervention	Post Intervention
Abraham	Y	N
Alistair	Y	N
Cameron	Y	N
Elle	N	unavailable
Alexis	Y	Y

3) In your opinion, have other parents broken "play dates" or cancelled other activities due to your child's aggression?

	Pre Intervention	Post Intervention
Abraham	Y	N
Alistair	N	N
Cameron	Y	N
Elle	N	unavailable
Alexis	N	N

4) If yes to number 2 or 3 do you still have a positive relationship with the parent?

	Pre Intervention	Post Intervention
Abraham	Y	not applicable
Alistair	Y	not applicable
Cameron	N	not applicable
Elle	n/a	unavailable
Alexis	N	Y

5) If there are other adults in the home (or who visit often) has your child's aggression been the topic of any arguments?

	Pre Intervention	Post Intervention
Abraham	Y	N
Alistair	na	N
Cameron	Y	N
Elle	N	unavailable
Alexis	Y	N

Table I: Questions 6-10 of the Parent Survey

6) In your opinion, have family members or other caregivers missed a day or stopped taking care of your child altogether due to aggression?

	Pre Intervention	Post Intervention
Abraham	Y	N
Alistair	Y	N
Cameron	Y	N
Elle	N	unavailable
Alexis	Y	N

7) Have you found it difficult to find someone to look after your child due to his/her aggression?

	Pre Intervention	Post Intervention
Abraham	Y	N
Alistair	Y	N
Cameron	Y	N
Elle	N	unavailable
Alexis	Y	N

8) Have you ever missed work because you had to pick your child up from school (or other caregiver) due to an aggression-related incident?

	Pre Intervention	Post Intervention
Abraham	Y	N
Alistair	N	N
Cameron	Y	N
Elle	Y	unavailable
Alexis	Y	N

9) Do you sometimes wish that your child could be as well behaved as other kids?

	Pre Intervention	Post Intervention
Abraham	Y	N
Alistair	N	N
Cameron	Y	N
Elle	N	unavailable
Alexis	Y	N

10) Has your child's aggression affected how much time you spend reading, playing, or engaging in other positive activities with each other?

	Pre Intervention	Post Intervention
Abraham	N	N
Alistair	N	N
Cameron	Y	N
Elle	N	unavailable
Alexis	Y	N

Results for the teacher satisfaction survey were obtained from three teachers. Teachers rated their satisfaction on a 5 point Likert-like scale. Individual scores for the three teachers' "satisfaction with the amount of work relative to gain" were 5, 5 and 4. Individual satisfaction ratings for "the overall usability of the procedures" were 5, 5 and 3. Individual satisfaction ratings for "using the procedures made a positive difference for the child" were 5, 5 and 5. Thus, teacher ratings of the intervention were high.

Discussion

The study examined the effect of a classroom-based intervention on the frequency of aggression-related injuries in an inclusive early education setting. Study results indicated that the frequency of aggression-related injury reports involving each of the five children was lower after the intervention compared to baseline. Outcomes maintained for all children with the exception of one week for Cameron and two

weeks for Alistair. Parent ratings of child aggression at home were lower after the intervention compared to baseline suggesting that outcomes may have generalized to the home setting. Teacher ratings of the intervention were high.

The fact that prior caregivers for each child (except Elle) had ceased services citing aggression as the cause, and, because the frequency of aggression-related injury-reports during baseline was either maintaining at a high level (Elle) or trending upwards, suggests that children were not likely to spontaneously "settle into" classroom routines. Thus, it appears that some form of intervention was required for each of the five children.

The study extends previous Teaching-Family research in three ways. First the study provides suggestive evidence that Teaching-Family procedures are effective for reducing injurious aggression displayed by pre-school children. Second the study documents long-term faithful use of Teaching-Family procedures by early educators. Third the study provides a tool (parent survey) that may be useful for collecting information regarding the impact of child aggression at home.

In addition, the intervention may have improved the sustainability factor "benefits to children, staff, and the organization" (which the team had identified as being in need of improvement prior to the study). Center records, clinical notes, structured interviews and informal observations appeared to indicate that children who participated in the intervention experienced a number of gains. According to these sources children were more independent in their use of self-help skills, joined more group activities instead of playing in isolation, engaged in more parallel and co-

operative play and received a “job” from the job board more often. Anecdotally, teachers reported improved relationships with the children who participated in the study. The Centre’s development team included the study results in a grant application. The Centre subsequently received substantial renewable funding for future research and program development efforts.

The intervention may have also increased the sustainability factor “support from stakeholders in other organizations.” Allied professionals who had previously ceased services returned to the setting to provide essential services. They stated that the children were easier to work with following the intervention and agreed to provide enhanced co-ordination of services. Staff from the local school district expressed interest in the program following treatment. They agreed to help refine the Centre’s grade-school readiness preparations, and, to assist with transition plans. Readers should note that the information regarding gains in sustainability factors is descriptive and did not undergo formal analysis. Future research should employ direct observation and a strong study design to analyze the relationship between the intervention and any subsequent gains for children, teachers, or the organization.

A major limitation of the study is the use of injury reports as the primary dependent variable. The reliability and validity of teacher reporting cannot be determined with certainty. Teacher training designed to reduce injurious aggression may have influenced teacher completion of injury reports. That is, the training may have set the expectation that injuries would decline. The collection of data derived

from formal direct observation would have bolstered confidence in the accuracy of the injury reports.

A second limitation is that the study design does not definitively rule out alternative explanations for the reductions in aggression-related injuries. Maturation could account for the reduction. For example, the team targeted skills such as sharing, taking turns and asking permission for Alistair. Sharing and similar social skills are emerging skills for pre-school children. Alistair might have acquired the skills without the intervention the result of which may have been a reduction of aggression-related injuries associated with him.

A third limitation is that the parent survey regarding the impact of child aggression at home may be open to bias. Parents of two children (Alistair and Alexis) were aware that the researcher was working with the children to reduce their aggression. It is possible that demand characteristics associated with the researcher biased survey responses for these two parents. Because the reliability and validity of parent survey reporting is uncertain, additional psychometric studies on the survey are warranted.

The small number of participants is a further limitation of the study. Like many Teaching-Family studies to date, the number of children who participated was relatively small. Thus, the results should be viewed as preliminary. Future research replicating the results would bolster confidence regarding the effectiveness of the procedures for reducing aggression-related injuries.

A practical concern was the delay between onset of aggression and onset of the intervention. The delays were due in part to the referral and treatment planning process. The process took two to four weeks. Training teachers to independently initiate treatment, at the first indication of aggression, might reduce or eliminate treatment delays

Teacher ratings, while high, occurred only after the intervention. Han and Weiss (2005) emphasized the need to gather teacher perception data both before and after treatment. Future research should collect ratings before as well as after treatment. Future research might also explore the effects of simplifying the procedures on both teacher satisfaction ratings and outcomes for the children.

The question arises as to why treatment fidelity maintained at such high levels (82% or above) for the duration of the study. Several factors may explain why. The Centre director often visited the teaching areas and playground. The first author provided weekly consultation. Reductions in aggression-related injuries may have reinforced use of the procedures. Benefits to the children, teachers and the organization or support from allied stakeholders may also have reinforced implementation. Future research should evaluate the impact that each of these variable may have on treatment fidelity.

Parent perceptions of aggression and aggression-related events at home appeared to decline following treatment thereby suggesting generalization. Progression through the seven phases of skill acquisition might account for any generalization that may have occurred. The phases involved skill use in different

settings and with different people. Prompts for skill use were progressively faded to facilitate independence. These procedures may have programmed for generalization. Future research might formally analyze the role of the skill acquisition phases on the generalization of child behaviors.

Additional future research might: 1) analyze the impact of bonding between teacher and child on future aggression, 2) continue explore the degree to which interventions anchored in Teaching-Family procedures reduce the impact of aggression at home, and 3) continue to document efforts to sustain developing programs.

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Chapter 7

Summary

The backbone of behavior analytic research through the years has been the gradual accumulation of knowledge garnered one study, often one participant, at a time. Thus, this paper represents one more step, or perhaps a few more steps, in the evolution of Teaching-Family research. The purpose of presenting the six studies described in this paper was to address limitations in prior Teaching-Family research. The limitations were that: Only one Teaching-Family study appeared to provide evidence that the procedures reduced extremely challenging behaviors such as injurious aggression. Only one Teaching-Family study documented the use of teaching-family procedures in conjunction with functional behavior assessment. It appeared that no study documented the use of Teaching-Family procedures in conjunction with commonly used intervention strategies such as individualized-education, quality of life, person centered and positive behavioral support plans. Only one Teaching-Family study documented improvements in quality of life for participants. There was little research to support use of Teaching-Family procedures in with young children and people with intellectual disabilities in typical settings such as early education classrooms or individualized living programs. The modest evidence supporting maintenance of outcomes was based mostly on anecdotal information as opposed to direct observation. Finally, Teaching-Family research has

often lacked the technological specification required for replication by researchers outside specific research settings.

Five studies presented in this paper examined the effects of Teaching-Family procedures on extremely challenging behaviors. The behaviors addressed were aggression (two studies focuses exclusively on injurious aggression), elopement and aberrant behavior including eating rocks and flailing. The results of each of the studies in isolation ranged from mildly suggestive to quite suggestive. Taken as a whole, the studies form a nucleus of Teaching-Family research suggesting that Teaching-Family procedures may be effective for reducing extremely challenging behaviors. Given that previously there appeared to be only a single study (Scott & Lorenc, 2007 as cited in the introduction) to suggest Teaching-Family procedures may reduce extremely challenging problem behavior, the studies presented in this paper represent a significant contribution to the Teaching-Family literature. More research is needed however, in order to broaden the evidence-base supporting the use of Teaching-Family procedures to treat extremely challenging behaviors.

All six of the studies presented in this paper document use of Teaching-Family procedures in conjunction with functional behavior assessment (FBA). The Individuals with Disabilities Education Act of 1997 mandates that FBA be used for all individuals with identified disabilities. Thus, documentation of the use of Teaching-Family procedures in conjunction with FBA presented in this paper helps to demonstrate that Teaching-Family professionals are providing services consistent with federal mandate.

The current studies do not provide an empirical analysis of the effects of adding functional behavioral assessment (FBA) to Teaching-Family procedures (with the possible exception of the study in chapter one). It is interesting however, that the combination of functional behavioral assessment and Teaching-Family procedures in five studies appearing in this paper produced results that suggested the combination reduced extremely challenging behaviors. More research is needed in order to determine if the addition of FBA is critical to the success of efforts to reduce extremely challenging behaviors using Teaching-Family procedures.

The studies with Bob (Chapters 2-4), the studies with Timmy (Chapter 5) and the studies involving the children from the Centre (Chapter 6) documented the use of Teaching-Family procedures as part of quality of life planning and as part of the individualized-education plans of several children. The use of quality of life and individualized education plans is widespread. By documenting the compatibility of Teaching-Family procedures with such plans for a variety of individuals, the studies in this paper may extend the dissemination potential of Teaching-Family procedures. Future research might specify procedures for the systematic integration of Teaching-Family procedures into individualized-education and other treatment planning processes. Such research should identify variables that may enhance or decrease the integration potential of Teaching-Family procedures.

Results from the study in Chapter 2 documented that Teaching-Family procedures produced comprehensive improvements in quality of life for both Bob and Percy. Information derived from informal observation, clinical notes, structured and

semi-structured interviews and the anecdotal reports of teachers (Chapter 6) indicated that Teaching-Family procedures improved independence, relationships with peers and teachers, academic skills and led to the participants fulfilling an important role in the classroom. These two studies extend prior Teaching-Family quality of life research both by documenting comprehensive changes in quality of life (as opposed to changes only on the dimensions of academics and relationships with teachers) and by documenting that Teaching-Family procedures produce improvements in quality living for populations other than adjudicated youth. More research is needed however, in order to document that the Teaching-Family Association is fulfilling its mission to improve the quality of life for individuals and their families.

The studies with Bob, Percy, and the two studies involving children at early education centers, document the use of Teaching-Family procedures in novel settings. In addition, the studies document sustained use of the procedures by staff in each of the novel settings. Thus, these studies further extend the generality of the procedures to include use in individualized living programs and use in inclusive early education centers by implementers typical to those settings.

All six studies presented in this paper presented evidence to suggest that outcomes resulting from the use of Teaching-Family procedures are durable over time. The study described in Chapter 5 involving Timmy, extends both the Teaching-Family literature and the broader literature by examining the conditions under which outcomes maintained. As noted previously in this paper, considerably more research

is needed in order to further our understanding of factors that produce treatment fidelity and maintenance of outcomes.

Prior Teaching-Family research has often lacked technological specification sufficient for replication by researchers outside specific research settings (e.g. Teaching-Family Association sponsor site). The tables detailing the Teaching-Family Components and Elements used in the current studies, combined with the details of specific procedures in the appendices, may provide the technological specification needed in order to replicate the current studies. Further, such detail may assist researchers in their intervention selection or in determining how to adapt Teaching-Family procedures to a specific setting.

The studies have many limitations as has been noted in each chapter. These limitations include but are not limited to use of designs that do not conclusively rule out alternative explanations for behavior change, use of primary dependent measures that have not been extensively tested for validity and reliability and lack of treatment fidelity data for one of the studies. Like most Teaching-Family studies the number of participants in each study was quite small. In addition, each of the settings had characteristics built in that may have supported the use of the procedures (e.g. Teaching-Family affiliated group home; Executive Director trained in Teaching-Family procedures or other program champion; stakeholder support for use of the procedures; funding for consultation services). Such factors may not be present in other settings. The generality of the findings may thus be limited to programs which support the capacity of individuals to implement the procedures.

In regard to increasing the scale of research, it is within the power of Teaching-Family Association executives to facilitate large scale research. Starting in the new millennium, and with the assistance of Teaching-Family Association executives, Teaching-Family researchers have begun to conduct large scale research involving larnge numbers of participants (e.g. Scott & Lorenc, as cited in the introduction). Unfortunately, a major limitation to this research has been the reliance on before and after designs. Thus, the results to several Teaching-Family studies have not been conclusive. If Teaching-Family researchers were to coordinate their efforts they could introduce a specific variable (the addition of functional behavior assessment, for example) one sponsor site at a time. Each sponsor site provides services to several group homes thus increasing the number of research participants. Using a multiple baseline design across sponsor sites would control for threats to internal validity not controlled for in before and after designs. By producing convincing large scale demonstrations, Teaching-Family professionals and researchers might further enhance the funding and dissemination potential of their programs.

Appendix A: Bob's Quality of Life Indicator Sheet

Note: Taken from formal participation plan and daily schedule documentation.

Employment: Baseline: none labeled unemployable. TFM: 1.5 hours 5/week (25 cents over min. wage)

Supplemental Work: Baseline: none. TFM: Recycling Route 4 days/week (about $10/week)

Relationships/Friends: Baseline: Bob reported friendships with 4 friends but saw them only for a few minutes at a time once or twice a week. TFM: Bob saw his 4 friends every day for between 30minutes-1hour, visited with friends and family of staff, visited with his employer and fellow employees, used money gained through work to treat a female friend to a movie once a month.

Self-Determination: Baseline: Bob did not select his own meals, did not shop for groceries, did not select or shop for his own clothes, or sign his own checks. TFM: Bob selected his food at the grocery store, made decisions regarding which brand to buy, selected and paid for his clothes at the mall, signed (by writing his name) and deposited his own checks.

Independent Living: Baseline: Bob did not make his own meals or dial the phone for himself. On the occasions when he tried to brush his teeth, shave, do laundry, or clean the apartment he made many mistakes. His appearance evoked corrective comments from peers and other community members.

TFM: Bob learned numbers (as indicated by skill acquisition data) and entered them into the microwave to make lunch. He dialed the phone for himself. He shaved

daily. When he did laundry, or cleaned the apartment his efforts were rewarded by positive comments from peers, visitors and staff.

Important Role: Baseline: No role that evoked positives from others. TFM: Bob was labeled "important" by peers served in the program. He was selected to accompany program staff to pick up medications from the pharmacy and delivery them to peers in their apartments. Peers also called Bob "rich" because he had a steady job that "paid good money".

Staff Turnover: Baseline: Fulltime day-staff (7am-11pm) trained to work with Bob during the previous year = 23. TFM: Fulltime day-staff trained to work with Bob during the year after TFM= 5. (note: There were two shifts during week and one on the weekend. One teacher moved. The 5th teacher was trained to replace the researcher.)

Hospitalization Costs: Baseline: In the year prior to post insurance costs totaled nearly $18,000.

TFM = $0. No hospitalization costs were incurred.

Appendix B: Percy's Quality of Life Indicator Sheet

Employment: Baseline: Percy's community work program requested that he no longer participate.

TFM: Percy obtained a cleaning job at a facility serving geriatric patients. He worked an hour a day each weekday. Percy was non-aggressive to residents and made many friends.

Supplemental Work: Baseline: Percy's previous teachers ceased taking him on his recycling route due to safety concerns while driving. TFM: Percy maintained a weekly recycle route.

Relationships: Baseline: Percy was able to visit his few friends for a few minutes. TFM: Percy extended his network of friends to include several other program participants, neighbors, and community members. Visits sometimes lasted more than an hour.

Self Determination: Baseline: Percy had few choices through the day. His food was selected for him and given on a limited basis (often resulting in aggression). His clothes were selected for him. Financial transactions were all made by someone else. TFM: Percy made healthy choices about what, when, and how much to eat. Percy picked out his own, clean, clothes which he washed himself. Percy carried his checkbook, made his mark on checks, and presented the check.

Independent Living: Baseline: Professional staff recommended that locks be installed on all food storage areas and the refrigerator in order to limit Percy's food

access. Percy required extensive physical assistance with toileting, shaving, and bathing. TFM: Percy placed his groceries in unlocked cabinets and the refrigerator. Percy chose to eat dinner at regular meal and snack times. Skill acquisition plans indicated that Percy required little physical assistance in toileting, shaving, and bathing.

Important Role: Baseline: Percy's role as a son was in jeopardy. His parent's had ceased allowing Percy to come home to visit. When Percy's parents visited him, they were unable to go into the community. Parental visits were short and limited to Percy's room. TFM: After about 3 months of program participation Percy began visiting home for short periods. After six months, Percy would spend the entire weekend every weekend with his mom and dad. When Percy's parents visited him, they would eat out in the community, go shopping, as well as spend time with Percy's friends.

Medical Concerns: Baseline: Percy's specialist stated that knee surgery would be required if Percy did not lose weight. . TFM: Percy's weight was reduced from 320 pounds to 255 pounds. The specialist stated that knee surgery was no longer imminent.

Appendix C: Skills Summary for Bob

Independent Living/Self-Help Skills: Hygiene: Deodorant, brush teeth and use rinse, shave, wear clean clothes. Constants: Vacuum, dishes, laundry, trash. Other: Learn numbers, use numbers (phone, microwave cooking). **Rationale:** To help with his goal to "take care myself" and to reduce the probability of antecedents to aggression such as criticism regarding his personal appearance and the appearance of his home.

Vocational Skills: Keep commitments, expand vocabulary, problem solving, telling time/learning numbers, accepting criticism, accepting the answer no, following instructions. **Rationale:** To help Bob accomplish his goal to "have a real job that pays good money.", to expand Bob's community access, to extend Bob's social network to include friends from work, to potentially decrease aggression by providing Bob with his own money to pay for fast food and preferred activities.

Social Skills: Share (competes/incompatible with aggression to retain item), accept the answer no (competes/incompatible with aggression to effect access to desired item, activity, or person), problem solve (competes with aggression), conversation skills (relationship development. Aggression may be less likely towards a person with whom Bob has a positive relationship), identify and label feelings (may occasion teacher or other person use of empathy statements and problem solving which in turn might help Bob get what he wants), complimenting others (relationship development), consideration of others (relationship development), waiting for others (relationship development). **Rationale:** To improve Bob's quality of life by helping

him to establish and maintain relationships with his parent/guardian, teachers, and friends, to help Bob with his goal to “spend more good times with friends”, and, to establish skills that might compete with aggression. Note: The skills following instructions, accepting no, accepting criticism, problem solving, complimenting others, consideration of others, and the term “constants” appearing above were selected from Kirigin and Wolf (1987). Division of skills into social, vocational, and Independent living skills was taken from Gilford and Daly (undated internal document, see refs.).

Appendix D: Teaching-Family Teaching Procedures

For a list of Teaching-Family Sponsor Agencies go to: http://www.teaching-family.org/agencies.html

General Praise: "Way to go! You're awesome!"

Effective Praise: Effective Praise can be used when a new skill is being established or to help maintain an established skill. If naturally occurring reinforcement is not available effective praise may be paired with reinforcing items from the individual's motivation system menu. Effective Praise consists of

1) General praise: "Neat!" 2) Description of functional/appropriate behavior: "You sure made Suzie feel good when you told her she looks nice." 3) Person centered rationale for using the skill: "She likes to spend time with you when you tell her she looks nice." 4) Closing praise and statement of formal contingency if needed (see phases of skill acquisition below): "Way to go! You've earned [item or token from motivation system menu]. Note: The effective praise template was taken from, Phillips, Phillips, Fixsen, and Wolf (1974).

Pre-Teaching: Teachers use pre-teaching to set the occasion for the performance of a skill to be demonstrated at a time in the near future. Thus, on the way to Suzie's house the teacher might say "Remember, Suzie likes compliments. When you see her, you might say, you look nice today Suzie." The teacher might add a request for acknowledgement (okay?) so that the person can ask questions or share a concern. The teacher might also review the name of the skill ("giving compliments"), the rationale for the skill (Suzie might want to spend more time with you), and review

the skill steps or specific examples of the skill ("you look nice", "you're smart") as part of pre-teaching. Pre-teaching may also be used as a form of "advanced warning" to alert the person to a situation that might require use of an alternate skill. An example might be to say to Bob "Remember that your boss at work might criticize how you cleaned the stalls. Do you remember what to do if your boss criticizes you?" Then use effective praise to reinforce correct response or a teaching-interaction (below) to address an incorrect response.

Preventative Prompt: The teacher uses preventative prompts to occasion the use of a new skill that is incompatible with an immediately anticipated undesired behavior. Pre-school teachers often use preventative prompts with children in their classrooms when they say "…and remember, let's keep our hands to ourselves" just before the kids sit down to circle. Note: Descriptions of pre-teaching and preventative prompts were informed by Schumaker, Phillips, and Braukmann, C. J. (undated internal document, see refs.)

Teaching Interaction: The teaching interaction is used as part of planned teaching to introduce a new skill, as part of planned-spontaneous teaching in order to help establish a new skill, and as part of spontaneous teaching to help an established behavior to maintain (each of these teaching tactics are described further below). The following interaction is much like one used to teach Bob how to tighten a bolt on his bike seat.

1) Initial Praise, Positive statement, or Empathy statement: I see you are working on your bike, neat!

2) Description of error/inappropriate behavior: "You're using your *needle nose pliers."* (Use tone of voice to emphasize the name of the tool*) "Needle nose piers* won't work on that *big bolt* very well."

3) Description of alternative/appropriate behavior: "Try the *wrench*".

4) Rationale: "*The wrench* will grip the *big bolt* really well."

5) Request for Acknowledgement: "I can show you, okay?" It is very important to request acknowledgement throughout in order to maintain the person's sense of accomplishment, to make sure they understand what you are trying to teach, and to be sure that they actually want your help at that moment. At this point in the interaction it is a great time to use a prompt to remind the person of exactly what to do if they do, or do not, want to be helped. You might say, "If you want to do it, that's okay, just say, I can do it. If you want me to keep helping you just say, help." Also, be sure that the description of the skill you are teaching is stated in terms that the person understands. You will know if they understand because you requested acknowledgement frequently. Be sure to model turn taking by quickly allowing the person a turn to show you what they learned. Also, maintain a normal voice tone when requesting acknowledgement.

6) Demonstration/modeling, verbal instruction: Show the person what to do and tell them how you did it.

7) Practice: "Here you try." 8) Closing Praise, Feedback, and Consequence from motivation system if needed (see phases of skill acquisition below): "You did it!" Incorporate least intrusive prompts if needed during feedback: During this stage the

teacher may address ongoing behavior/practice (Bob's attempts at using the wrench) in the form of another teaching interaction. The bike interaction with Bob looked something like the one below.

1) Praise with description of appropriate: "Thanks for letting me help you. This is fun. You're using the wrench. Good." 2) Description of error or inappropriate behavior: "You're loosening the bolt, by turning the wrench that way (point in direction he is turning). The seat still falls down see?" Push on seat and it goes down. 3) Description of alternative/appropriate: "If you turn the wrench this way (point in correct direction)…. 4) Rationale: " …the wrench will tighten the bolt and the seat will stay up."

5) Request for acknowledgement: "Yeah?" Note: Bob already agreed to and been provided with a demonstration so on to 7) Practice: Practice can incorporate least intrusive prompts. Thus, Bob was provided with a verbal cue, "turn the bolt that way", and a gesture (point in direction of correct turn). When Bob struggled a bit hand over hand prompting was used on the first two turns, then light hand over hand, then physical prompt withdrawn. 8) Closing Praise: "You did it. Great job, check it out." (Push on seat that stays up). A complete effective praise interaction (see above) can be added at step 8 to emphasize the specific behaviors that were used, and, to incorporate motivation system consequences if needed.

Notes: Effective praise should occur at least 4 times as often as teaching interactions. Teaching interaction template taken from, Phillips, Phillips, Fixsen, and Wolf (1974).

Body Basics: Pleasant eye contact as opposed to angry glare or disappointed expression, full to three-quarters facial regard during instructions and teaching interactions, facial regard not required during verbal de-escalation, calm voice, not blocking doors or persons progress unless there is a clear and immediate danger, respecting the person's personal space, avoid sudden or very fast movement.

Note: Body Basics were selected from, Kirigin and Wolf (1983a).

Considerations when using Verbal De-escalation: a) Communicate with other staff and roommates regarding the nature of the situation if possible. b) Maintain body basics. c) Observe persons movement, breathing, facial expression, and listen to what they are saying even if it is hostile.

Verbal de-escalation Steps: 1) Issue empathy statements. Avoid using S.O.D.A.S., see below. Do not engage in assessment of blame or argumentation. 2) Describe specific behaviors in which the person can engage that will help resolve the immediate crisis (pre-testing person's readiness for instruction). 3) Praise approximations or completion of appropriate behaviors (especially those that teacher just described).

4) Test person's emotive state and readiness for instruction by issuing a high probability instruction. Follow steps 1-4 if person does not follow instruction. 5) Increase task demands when person is calm. Use steps 1-4 if needed. 6) Re-test emotive state and readiness for instruction by asking if the person is ready to discuss any consequences of inappropriate behavior (often the person will bring this up). Avoid argumentation regarding fairness as well as harsh re-statements of "the rules".

Use steps 1-4 if needed. 7) Issue consequence/State person has not earned item for the interval. Use steps 1-4 if needed. 8) Positive Correction (Issue statement that opportunity to use positive alternative will be available at a specific time later. Later, follow steps of Phase 4 skill acquisition below. 9) Make statement informing person that the situation is stable ("everything's okay now", "we're okay", etc), and, allow time for both you and the person to relax (obviously teachers must remain attentive). Resume scheduled activities when person appears ready. 10) Communicate with other staff that situation has been resolved.

Note: Verbal de-escalation adapted from Kirigin and Wolf (1983b).

Problem Solving: The problem solving method we used is called S.O.D.A.S. which stands for Situation, Option, Disadvantages, Advantages, Summary. Note: S.O.D.A.S. described by Willner and Braukman (undated internal training document, see refs.)

NOTE: Additional non-TFM Procedure: Least Intrusive Prompt Sequence. We used the I,V,G,P prompt hierarchy which translates to Independent, Verbal Prompt, Gesture, Physical Prompt.

Appendix E: Teaching-Family Skill Acquisition Procedures

Phase 1: Planned teaching: Introduce Skills steps and Provide Rationales. 1) Introduce the name of the skill (asking permission, for example). 2) Introduce rationale for skill (get along better with roommate/friend, roommate/friend more likely to share item desired by person you are teaching). 3) Introduce skill components (say persons name/ show picture of person, wait until person looks at you, state request/ show picture of item, wait for person to agree, say "thank you"). Note: The specific components of specific skills may be varied according to the needs of the individual. 4) State qualitative components (speak loud enough so person can hear you, use pleasant voice tone). 5) Identify situations when to use skill (and perhaps when not to use the skill). Note: Skills are seldom introduced in isolation. Most skills are part of an associated skills set. In the case of asking permission the associated skills set might include sharing, taking turns, accepting the answer no, respect for others property, and returning items. 6) The skill is identified as "target skill" and added to the persons motivation system card/schedule.

Phase 2: Planned teaching: Skill role play with prompts in a controlled situation.

1) Set up practice (teacher should ask roommate if it is okay to take picture of his radio, ask roommate to borrow radio in order to teach roommate how to ask permission (which may require a teaching interaction to the roommate regarding the skill "sharing"). 2) Cue person that you are going to help them learn "asking permission". 3) Request acknowledgement, use rationales or prompts if needed.

("Remember how you want to use Bart's radio? Let's practice "asking permission". That way Bart might let you have a turn listening to the radio). 4) Review skill component steps and qualitative dimensions. 5) Request acknowledgement again in order to be sure person understand skill steps and is ready to practice.

6) Practice the skill and provide feedback using effective praise, preventative prompts, and teaching interactions as needed. 7) If part of a formal skill acquisition plan, graph the acquisition data according to intrusiveness of prompts needed for each step (independent, verbal, gesture, physical). 8) Use effective praise including item/consequence from motivation system.

Phase 3: Planned teaching: Skill Role Play without prompts in a controlled situation.

1) As Phase 2 but omit step 4 (full review of skill components and qualitative dimensions of the skill)

2) Use effective praise with item/consequence from motivation system.

Phase 4: Planned-Spontaneous teaching: Skill usage in real situation with prompts.

1) Tell the person that the opportunity to use a skill will occur at a specified time. Note: Be sure that it is likely that the person will be able to identify the situation when it occurs. A picture schedule (provided the person uses a picture schedule fairly independently) or verbal description may be used. 2) Set up an opportunity to use the skill. 3) Present the situational cue for skill use (roommate is home and done going to

bathroom, for example). 4) Prompt person that the situation to use the skill is present, if needed.

4) Allow time for person to attempt using the skill. Prompt skill steps, if need. 5) Provide feedback in the form of effective praise or teaching interaction and pair with item/consequence from motivation system.

Phase 5: Spontaneous Teaching: Skill usage with minimal prompting in real situations.

During routine events opportunities to use the skill arise. The person is not informed well ahead of time that the opportunity to use the skill will arise (fade well advanced prompt that situation will arise). However, an immediate preventative prompt may be used to facilitate skill usage should the person appear not identify the situation at first (teacher might say, "Remember to ask permission", before the person takes the radio without asking). Use effective praise (including item/consequence from motivation system) for correct skill use. Do not use any response cost or statement that the person did not earn a menu item. At Phase 5 the skill is not yet considered an established skill.

Phase 6: Spontaneous Teaching: Provide no prompts for skill usage. Provide effective praise (paired with item/consequence from motivation system menu) for correct use of the skill. Use a teaching interaction for incorrect use of the skill. Response cost may be added but was not used as part of the present program description. This step is not appropriate for use with all persons. Advance to this step only when the person demonstrates a pre-specified skill mastery level agreed upon by

the team. At this phase the skill may or may not be removed from the list of target skills.

Phase 7: Independence is simply skill use or non-use without any prompting and no reinforcement from items from the motivation system. Effective praise (without motivation system menu item) may still be used, but general praise is more appropriate. Typically, once a person advances to Phase 7 the skill is removed from the list of targeted skills. Note: Skill Acquisition Procedures adapted from Kirigin & Wolf (1994).

Appendix F: Section of Motivation System Card/Schedule with details of DRO

Instructions to teacher: Provide the opportunity to complete each skill listed for the time period (for heading that reads "additional curriculum skills" select one or more). If [person served] does not engage in each (for #5 one or more) skill for the time period he does not earn the [quarter/"A" list menu item], but may earn [dime/"B" list menu item], if he uses the skill on another opportunity provided by the teacher within the time period. Indicate earnings in the space provided. In the "Spent" column indicate if the [menu item/money] was used or saved. Note: Physical aggression (including aggression towards property) has additional consequences listed at the bottom of the page.

7:00am-9:45am: note: meds at 8:00am teacher initial here:___

Preplan breakfast and midmorning snack

7:00am-8:30am morning routine Initials Earnings Spent

1. Hygiene: (shave, brush teeth, oral rinse, deodorant and wear clean clothes).

2. Consideration of others: (waiting for others, reports problems).

3. Reports Whereabouts

4. Displays no physical aggression to people or property

8:30-9:45 work (see schedule book for details).

5. Bob should demonstrate at least one from list. Circle completed skills: keep commitments, accept criticism, expand vocab, id. #'s,

i.d. feelings note: list feelings labeled _____

compliment other, constants (vacuum, dishes, laundry).

DRO: In addition to the above [person served] earns a [large special event] for every 7 days that he does not physically aggress upon a person or property. This is a DRO (interval of 7 days, and re-sets). This DRO is not for verbal aggression.

Appendix G: Treatment Fidelity

Motivation System/Card Review: 1) Documentation legible 2) Teaching balanced across staff. 3) Teaching to target skills: Did the teacher circle target skills to indicate performance? 4) Teaching to social, academic, and independent living skills: Were skills weighted according to treatment plan?

5) Was the overall frequency of teaching satisfactory? 6) Appropriateness of consequences (is documentation of consequences consistent with instructions to teacher on the card). 7) Did the teacher initial that the consequence was delivered? 8) Did the teacher indicate that the quarter, dime, or menu item was used and how? 9) Planned-Spontaneous teaching: If the person served did not earn a positive consequence initially, did the teacher document the award at a later time? 10) Did the teacher file the card in the proper place at the end of the day?

Note: Card review procedures adapted from, Bastien, J., *"Card Reviews as Teaching Tools"*, appearing in the internal undated training manual, Handbook for Consultants at Boys Town Affiliated Sites. Boys Town, NE.

Home visit: **Teaching**: 1) Motivation system card and items readily available. 2) Respond to opportunities to use effective praise. 3) Provide opportunities to use target skills (including using any Phase of Skill Acquisition procedure). 4) Respond to opportunities to pre-teach. 5) Respond to opportunities to use preventative prompts. 6) Respond to opportunities use teaching interaction to address behavior.

7) Complete teaching (complete applicable steps of effective praise, teaching interaction and/or any phase of skill acquisition procedures). 8) Administer consequences as stated on card (SR+, DRO).

9) State and provide opportunities for positive correction (planned-spontaneous). 10) Frequency of all types of teaching appropriate for activities. 11) Effective praise or general praise to teaching interactions at least 4:1. 12) Respond to opportunity to use S.O.D.A.S. using all steps. 13) Use Body Basics. 14) Use verbal de-escalation appropriately (transition from teaching interaction to verbal de-escalation when needed, correctly use majority of steps, results in calming person). 15) Use least intrusive prompts in correct sequence and provided sufficient time for person to respond to each prompt.

Documentation: 16) Participation Plan/Community Access Form indicate day's activities. 17) Skill acquisition data collected. 18) Skill acquisition data graphed. 19) Behavior plan (maladaptive behavior) data graphed. 20) Motivation system card filled out for the day of the visit. Note: Home visit procedures derived from, *"Achievement Place Research Project Teaching-Parent Professional Evaluation In-Service Training Materials"*, appearing in, Teaching-Parent Manual Vol. 3. Achievement Place Research Project: University of Kansas.

Appendix H: Adaptations to Teaching-Family Fidelity procedures for use with individuals with intellectual disabilities

1) The motivation system was adapted to be "positive only". The motivation system did not include point loss or other response cost procedures. 1a) Because the motivation system did not involve response cost the requirement of a minimum 4:1 positive to negative (earn-loss) ratio did not apply to motivation system card reviews (see treatment fidelity in Appendix G). 1b) Verbal de-escalation (adapted from "intensive teaching" see Appendix D) did not include any response cost procedures. 1c) Teaching interactions did not include any form of response cost. 2) The motivation system did not include "levels" or graduated transitions from daily to weekly (or longer) exchanges, use "sub systems", or use "homeward bound" bonds. (The men already lived in their own homes and had not been adjudicated for any offence). 3) Because the men did not attend school certain academic skills that are typically taught in TFM (such as arrive to class on time, take seat upon entering room) were not targeted.

4) Verbal de-escalation procedures were expanded to include frequent tests for readiness to respond to instructions. 5) The treatment fidelity procedure for home visits was modified from a rating system of 1-7 on a Likert-like scale to the system described in the treatment fidelity sections of this paper. 6) Quality of Life Planning was used in conjunction with TFM. 7) Least intrusive prompting was also added to the procedures.