

# Randomized Prevention Trial for Early Conduct Problems: Effects on Proactive Parenting and Links to Toddler Disruptive Behavior

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Despite knowledge of early pathways to conduct problems, few preventive interventions are specifically designed to modify disruptive behavior in toddlerhood. One potential prevention target is proactive and positive parenting, which is associated with reduced risk of conduct problems in preschoolers. This randomized trial with 120 low-income 2-year-old boys examined whether a brief family-centered intervention that reduces disruptive behavior (D. Shaw, T. Dishion, L. Supplee, F. Gardner, & K. Arnds, 2006) also leads to increases in proactive and positive parenting. It also explored whether change in parenting predicts change in disruptive behavior. In the intervention group, proactive and positive parenting skills increased among parents of 3-year-olds. Change in proactive and positive parenting of 2- to 3-year-old toddlers correlated with change in child disruptive behavior, although the mediation effect of positive parenting was of only borderline significance. Findings suggest that even within a brief and multifaceted preventive intervention, change in proactive parenting skills contributes modestly but significantly to change in child problem behavior.

*Keywords:* conduct problems, disruptive behavior, randomized prevention trial, proactive/positive parenting, early childhood

There is much evidence to show that early starting disruptive behavior places children at risk for conduct problems, chronic antisocial behavior, and drug use (Shaw, Gilliom, Ingoldsby, & Nagin, 2003; Moffitt & Caspi, 2001). Developmental studies starting in early childhood suggest that family, child, and social factors play a part in the genesis of these problems. Of potential causal factors, parenting skill is particularly significant, as it may mediate the effects of social conditions on child outcomes (Patterson, Reid, & Dishion, 1992). Moreover, parenting is clearly modifiable (Gardner, Hutchings, & Lane, 2004; Webster-

Stratton et al., 2001) and contributes to change in later conduct problems (Campbell, Shaw, & Gilliom, 2000; Gardner, Sonuga-Barke, & Sayal, 1999).

A promising feature of some early prevention programs is their focus on periods of developmental transition. Transitions can be seen as stages when caregivers are likely to be motivated to address parenting issues, for example, during adolescence when children may begin experimenting with risky behaviors. At these times, parents are particularly likely to be receptive to learning skills to deal with emerging challenges elicited by rapid change in development. Prime examples of capitalizing on transitions include Olds's (2002) Nurse-Family Partnership, which engages mothers during the transition to parenthood, in the first pregnancy and infancy, to promote maternal health and quality of parenting. Another is Dishion's Adolescent Transitions Program, which uses the Family Check-Up (FCU; Dishion & Kavanagh, 2003). The focus of this article is the transition to toddlerhood (Shaw, Bell, & Gilliom, 2000) when the child develops more mobile, willful, and unsafe behavior, and at the same time lacks the skill to regulate emotions or to consider his or her own safety or the needs of others. As a result, this transition can set the stage for increased stress and conflict in the parent-child relationship as the parent tries to set limits on oppositional behavior.

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There is good evidence to show that parents' skill at managing coercive interactions can influence the development of conduct problems (Shaw et al., 2000). This work has led to interventions for reducing negative and inconsistent parenting and for learning effective discipline (Patterson et al., 1992). However, there is a growing body of research showing the importance of early positive interactions between parent and child (Denham et al., 2000). Early observational work (Gardner, 1987) showed that in 3- to 4-year-olds with early conduct problems, only 20% of the child's time was spent in conflict with parents. We would expect the quality of positive interactions during the 80% of quieter time to have a preventive effect on conduct problems. This hypothesis has been tested in short-term longitudinal studies across the preschool years, in which early observed positive interactions predicted fewer conduct problems in high-risk samples (Gardner, Ward, Burton, & Wilson, 2003). It has also been tested in a longer term study (Pettit, Bates, & Dodge, 1997), where positive parenting measured by parent interview at age 5 was found to predict child academic outcomes at age 12, even after accounting for the effects of harsh parenting. Furthermore, positive parenting appeared to buffer the effects of family adversity on child externalizing outcomes. Finally, within intervention trials, positive parenting appears to have at least as powerful an effect on conduct problems as negative parenting (Gardner, Burton, & Klimes, 2006; Martinez & Forgatch, 2001).

Although overall positivity might be expected to influence the course of development generally across infancy and early childhood, retaining a positive stance may become a greater challenge during the toddler transition. At this stage, parents' ability to take active steps to minimize the child's boredom or exposure to forbidden situations may prevent oppositional behavior from arising. Parents may achieve this through developing anticipatory awareness of what the child may do next and using strategies such as structuring the child's time carefully, and taking preventive action in troublesome situations, to minimize conflict.

There is growing evidence from experimental and longitudinal studies that parents' use of "proactive" strategies can prevent problem behavior in the short and longer term (Denham et al., 2000; Gardner et al., 1999). Holden's elegant work showed how mothers' efforts to structure the child's activities in high-risk settings had immediate effects on child misbehavior (Holden & West, 1989). Others have examined effects of proactive parenting over somewhat longer time periods. Gardner et al. (2003) found parents who frequently initiated joint play had fewer child conduct problems 1 year later, after other predictors of outcome were controlled for. In another observational study (Gardner et al., 1999), parents' use of strategies that were timed so as to potentially "preempt" trouble predicted improvement in immediate compliance, as well as in conduct problems 2 years later. In both studies, frequency of negative parenting did not predict worsening of conduct problems over time. Furthermore, early proactive parenting may be a precursor to critical later parenting behaviors, such as monitoring. Dishion and McMahon (1998) suggested that planning and

scaffolding the young child's activities, and paying close attention to his or her needs, will show continuities with later ability to monitor the child's behavior in the community; this was borne out in an interview study (Pettit, Laird, Dodge, Bates, & Criss, 2001).

Given that proactive and positive parenting strategies appear to be important for preventing early conduct problems, it makes sense to teach these skills as part of a broader parenting intervention. If such teaching is successful, we would expect to see changes in proactive and positive parenting following intervention. Furthermore, if these factors are indeed important in development and prevention of conduct problems, then we would expect change in child problem behavior over time to be partially accounted for by changes in positive parenting.

We explored these issues in the context of an early family-based prevention trial. Although the focus of the present article is on proactive and positive parenting, much literature has focused on the longitudinal effects of early harsh parenting on child problem behavior (Patterson et al., 1992; Shaw et al., 2003). Therefore, to test for specificity of effects of positive parenting, we accounted for the effects of negative parenting on later child conduct problems.

The Early Steps trial (Shaw, Dishion, Supplee, Gardner, & Arnds, 2006) is a randomized trial of a brief family-centered intervention, aimed at very early prevention of conduct problems through enhancing parenting skills. It focuses on low-income families with toddlers, screened for risk factors for later conduct problems. It draws extensively on developmental knowledge of risk factors for early starter conduct problems, including continuities between toddler disruptive behavior and later conduct problems (Gardner et al., 1999; Moffitt & Caspi, 2001; Shaw et al., 2000, 2003). Engaging high-risk families in preventive interventions poses many challenges, stemming from their multiple problems and from the fact that they have not requested help. Thus, an important feature of the intervention, Dishion and Kavanagh's (2003) FCU, is the use of motivational interviewing (Miller & Rollnick, 2002) techniques to enhance engagement and motivation for change in parenting. Initial findings (Shaw et al., 2006) show intervention effects on age 3 disruptive behavior by parent report (Child Behavior Checklist 2-3 [CBCL; Achenbach, 1992] Destructive), including stronger effects for those at higher risk for conduct problems.

Given these promising preventive effects on toddler problem behavior, the next step is to examine, first, whether directly observed proactive and positive parenting change following intervention and, second, whether change in proactive and positive parenting predicts change in disruptive behavior, even within a multifaceted intervention. Where such changes substantially account for the intervention effect, then parenting would qualify as a mediating mechanism (Kraemer, Wilson, Fairburn, & Agras, 2002; Rutter, 2005). On the other hand, within the context of an intervention with broad goals, such as the FCU, which focuses on parenting but also deals with wider family issues that impinge on parenting (e.g., parent well-being, partner relation, child care), we did not necessarily expect proactive parent-

ing to mediate the association between treatment and child outcomes. However, in line with other longitudinal and intervention studies, we expected changes in proactive and positive parenting to contribute to the prediction of later child conduct problems. This study extends previous work addressing the role of positive parenting in the context of longitudinal studies on toddlers (Denham et al., 2000; Gardner et al., 1999) and of intervention studies with older children (Gardner et al., 2006; Martinez & Forgatch, 2001) showing mediation effects of positive parenting. This extension examines low-income, urban boys at high risk for conduct problems beginning at an earlier age than in previous studies. Both observed parenting and parent-reported child problem behavior were assessed at ages 2 and 3, allowing us to test the following questions:

1. Does a brief parenting-focused intervention in low-income toddlers at high risk for conduct problems lead to increases in positive and proactive parenting from ages 2 to 3?
2. Given that this intervention leads to decreases in the primary outcome, disruptive behavior (Shaw et al., 2006), to what extent do changes in proactive and positive parenting contribute to change in child disruptive behavior from ages 2 to 3, independent of effects of negative parenting?

## Method

This article conforms to CONSORT guidelines for reporting randomized controlled trials. Ethical approval was granted by the institutional review boards at the authors' institutions.

### Participants

Participants (see Figure 1) included 120 mother–son dyads recruited in 2001 from Women, Infants, and Children (WIC) Nutritional Supplement Program sites in metropolitan Pittsburgh, PA. The decision to include only boys was based on our greater knowledge about their risk factors for early development of conduct problems. Sample size was based on power analyses from previous research showing detectable moderate intervention and mediation effects with 100 high-risk families (Dishion, Nelson, & Kavanagh, 2003). Families were invited to participate if they had a son 17 to 27 months old, following a screen to ensure they met study criteria by having socioeconomic, family, and/or child risk for conduct problems. Two or more of the three risk factors were required for inclusion in the sample (as detailed in the following paragraph). Of 327 mothers approached, 271 (83%) agreed to participate in the initial screen. Of these families, 124 met eligibility requirements and 120 (97%) agreed to participate. Table 1 shows demographic characteristics of the sample, which did not differ by treatment allocation. Over half were single parents, and about half were African American. Of 120 families who initially participated, 112 (93.3%) were assessed 1 year later. There

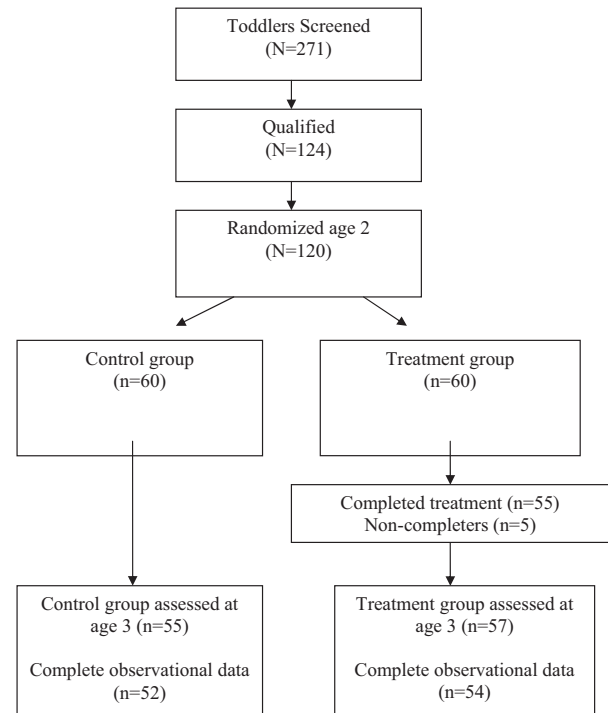


Figure 1. Participant flowchart.

were no differences between those retained ( $n = 112$ ) and those lost to follow-up ( $n = 8$ ) on SES and child behavior measures.

Mothers were approached at eight WIC sites and asked if they would be willing to complete questionnaires about the “Terrible Twos.” These focused on child disruptive behavior, parenting stress, and depression and took 20 min to complete. Participants received \$10 for their assistance. Because of their participation in WIC, all families would be considered low income; therefore, study inclusion was based on meeting additional criteria in two of the following three areas: sociodemographic, family, and child risk. Sociodemographic risk was defined as low maternal education level; family risk as maternal depression, mother teen pregnancy, or substance abuse; and child risk as child externalizing behavior. If risk criterion was attained for only SES and family risk, mothers were also required to rate the child above the normative mean on the Eyberg Behavior Inventory (Eyberg & Ross, 1978) to increase the probability that parents would desire assistance in this area. Families who met these criteria were contacted about participating in a more intensive study, where half would have the opportunity to participate in a home-based intervention (see Figure 1, participant flowchart).

### Procedure

Families who met eligibility requirements and gave written informed consent participated in a 2.5-hr home visit. The first part consisted of video-recorded observation tasks, described later in the *Measures* section. For the remainder

Table 1  
Participant Characteristics at Baseline by Treatment Allocation

Child, parent, or family characteristic	Intervention group	Control group
Child age, mean months ( <i>SD</i> )	23.7 (2.8)	23.5 (2.8)
Mother age, mean years ( <i>SD</i> )	26.2 (5.8)	28.2 (6.4)
Mean annual family income, \$000 ( <i>SD</i> )	15.7 (9.9)	15.0 (7.6)
Mother Beck depression score ( <i>SD</i> )	12.2 (10.6)	11.8 (7.8)
Child ethnicity (%)		
European American	33	49
African American	54	40
Mixed race	13	11
Mother married or living with partner (%)	46	46

Note. All group differences were nonsignificant.

of the visit, mothers completed further questionnaires. They received \$100 for participating. Approximately 12 months later, around the 3rd birthday, families in both conditions participated in follow-up visits. These were very similar with respect to structure and measures to the initial home visit.

### Randomization

The randomization sequence was computer-generated by a staff member not involved with recruitment. No methods were used for restricting randomization. To ensure blindness, the examiner opened a sealed envelope revealing assignment only after all assessments were completed and shared this information with the family. Families assigned to intervention were then scheduled to meet with a therapist for two or more sessions. Examiners conducting follow-up assessments were unaware of families' allocation.

### Intervention Protocol: FCU

Families allocated to control and intervention groups participated in the same research assessments. Those in the control condition received WIC food vouchers but no intervention from therapists. Families allocated to intervention were offered the FCU following the research assessment at home. The FCU is a brief intervention designed to motivate parents to engage in positive, proactive parenting practices (Dishion & Kavanagh, 2003). The intervention involves the use of motivational interviewing, a therapeutic technique that addresses the client's ambivalence about change, modeled after the Drinkers' Check-Up (Miller & Rollnick, 2002). Motivation is also addressed by sharing assessment results with parents and by discussing parenting and child behavior relative to norms and parent expectations.

In the present study, the initial meeting was a home assessment conducted by research staff, as described earlier, which included observation tasks and questionnaires. Although information from this session fed into the therapy, it did not count as one of the intervention sessions. The second session was a "get-to-know-you" (GTKY) meeting, the first one with the therapist, to explore parent concerns relevant to

child well-being. The third meeting was a feedback session, where the therapist systematically summarized the results of the baseline assessment, using motivational interviewing strategies. At the feedback, parents were offered a maximum of six follow-up sessions focused on parenting practices and other contextual issues (e.g., child care, marital adjustment, housing). Families were paid \$25 for completing the feedback session but were not paid for other intervention sessions.

Two master's-level therapists were trained and supervised weekly by Daniel S. Shaw and Thomas J. Dishion. Videotaped sessions were used for supervision, both face-to-face and by video conference. Therapists followed a written manual and used Dishion and Patterson's (1996) book to guide parenting support. Of families assigned to the treatment condition, 55 of 60 (92%) participated in the GTKY and feedback session. For those who met with a therapist, the mean number of face-to-face sessions per family was 3.26 (*SD* = 2.3, range = 2–8), including GTKY and feedback as two of those sessions but not including the initial assessment. Eleven families attended three sessions. The number, spacing, and delivery mode (e.g., home visits, phone calls) of therapy sessions were guided by parent preference and ranged from weekly, face-to-face, to monthly, by phone. Sessions typically lasted 1 hr for in vivo meetings and 20 to 30 min for phone calls.

### Measures

**Demographics.** This mother-reported measure asked about family structure, parental education, income, criminality, and stressors.

**Parent-child interaction at home.** This was video-recorded for 50 min during six structured settings: free play while mother fills in questionnaires (20 min), cleanup (5 min), delayed gratification (6 min), two inhibition-inducing toys (4 min), meal preparation, and lunch (10 min each). Settings were designed to be seminatural and to sample different everyday home situations (Gardner, 2000). All settings allow parents to use skills they may have learned for preventing and dealing with child behavior. Some settings bring the potential for mild conflict to arise (mealtime, cleanup), including tasks when mother is busy and the child may become bored (meal preparation, free play, delay of gratification). The 30 min of "mother busy" tasks are an important feature of the observational method, as they allow assessment of proactive strategies mothers use to structure children's time when they might otherwise be bored, including making suggestions to children about activities they can do (Gardner et al., 1999, 2003).

Observations were coded from videotape onto paper coding sheets according to a manualized coding system measuring parent-child interactions, validated in earlier cross-sectional (Gardner, 1987, 1994), short-term longitudinal (Gardner et al., 1999, 2003), and intervention (Gardner et al., 2006) studies with similar samples of parents of young children at risk for conduct problems. These studies all showed predictions from positive parenting to child conduct problems. Proactive and positive, as well as negative, par-



enting strategies were assessed using a range of event-coded categories. To avoid multiple comparisons, we collapsed molecular event codes into two macrocodes, proactive–positive and negative strategies, by summing the frequencies of negatively and positively themed event codes across all tasks.

*Positive and proactive parenting.* This macrocode included the suggestion of constructive activities to the child, use of positive discipline strategies (including bargain, reward, playful strategies), preemptive use of these strategies (defined as using strategies prior to any child misbehavior, Gardner et al., 1999), and praise.

*Negative parenting.* This macrocode included criticizing, threatening, using sarcasm, and yelling. Hitting was too rare for inclusion.

Reliability checks were conducted on 25% of families, at ages 2 and 3, by trained, independent observers, blind to treatment allocation and behavior scores. Intraclass correlations calculated between observers were .84 for the macrocode proactive–positive parenting and .95 for the macrocode negative parenting. Coders were two graduate research assistants, unconnected with the intervention team and with many years' experience of observation coding.

*CBCL (Achenbach, 1992).* The CBCL 2–3 was the primary outcome measure for the trial, reported elsewhere (Shaw et al., 2006). This 100-item parent questionnaire assesses behavioral problems, using two broadband factors, Internalizing and Externalizing, and narrowband factors, including Destructive and Aggressive behavior. As we were interested in examining whether specific types of externalizing clusters were amenable to intervention, we focused on the two narrowband factors from the 2–3 version: Destructive and Aggression. As only destructive behavior changed following treatment, we analyzed mediation in relation to this outcome.

### Analysis Strategy

Intervention and control groups were compared on a conservative intention-to-treat basis, using *t* tests on pre–post change scores, from ages 2 to 3. This meant that all available families were included in analysis of change, irrespective of level of uptake of intervention, including those who received no sessions (Altman et al., 2001). Using change scores ensures that baseline levels of parenting and child outcome variables are controlled for in the analysis.

All change scores were calculated by simple subtraction, such that a higher change score represents greater improvement in the desired therapeutic direction. Pearson's correlations were used for initial exploration of relationships between change in positive and negative parenting and change in child outcome. Multiple linear regression was used to investigate contribution of positive and negative parenting to child destructive behavior, described subsequently. Two-tailed tests were used in the regression analyses; however, given the specific, theoretically derived directional hypotheses about proactive and positive parenting, one-tailed *t* tests were used for the initial group comparisons.

## Results

### *Change in Parenting and Child Behavior Following Intervention*

Table 2 shows proactive–positive and negative parenting variables by group allocation, pre- and postintervention. As would be expected following randomization, treatment and control groups were broadly similar at baseline on these variables, with no significant differences by group. However, given some minor variation in parenting by group at baseline, it was appropriate to analyze data by change scores, to account for baseline differences.

The developmental trend across time was for maternal proactive–positive and negative strategies to increase between ages 2 and 3. However, *t* tests showed that the intervention group gained more in proactive and positive parenting between ages 2 and 3, compared with the control group ( $p = .037$ ). Observed negative parenting did not change as a result of the intervention.

### *Predicting Change in Child Behavior From Change in Parenting*

Bivariate correlations showed that increases in proactive and positive parenting strategies from ages 2 to 3 predicted improvement in CBCL Destructive scale scores across the same period ( $r = .21$ ,  $p = .015$ ). Change in negative parenting did not predict change in child CBCL Destructive ( $r = .06$ ,  $p = .57$ ). Next we explored whether the contribution of proactive and positive parenting to change in child behavior is specifically associated with treatment or whether

Table 2  
*Intervention Effects on Observed Positive and Negative Parenting, Ages 2 to 3*

Observed parenting <sup>a</sup>	Treatment allocation	Age 2		Age 3		Change score, ages 2 to 3		Difference between group means in change score <sup>c</sup>		
		<i>M</i>	<i>SD</i> <sup>b</sup>	<i>M</i>	<i>SD</i> <sup>b</sup>	<i>M</i>	<i>SD</i>	Difference	<i>SE</i>	<i>p</i>
Proactive-positive	Treatment	5.4	4.2	9.7	7.3	4.2	7.0	2.4	1.3	.037
	Control	6.0	4.8	8.0	5.9	1.8	6.5			
Negative	Treatment	2.0	2.8	5.1	5.6	–3.2	6.1	–0.97	1.1	.38
	Control	1.6	2.2	3.9	5.6	–2.2	5.2			

<sup>a</sup> Sample size for observational analysis = 54 treatment and 52 control. <sup>b</sup> Frequency range = 0 to 37 for positive, 0 to 28 for negative parenting. <sup>c</sup> Probability value, one-tailed *t* test.

it is simply a general predictor, irrespective of treatment status. We first examined intercorrelations between proactive parenting, child destructive behavior and intervention status. Figure 2 shows that all three variables are intercorrelated; treatment status is related to change in proactive parenting ( $r = .18, p = .037$ ) and change in CBCL Destructive ( $r = .26, p = .004$ ); change in proactive parenting is related to improvement in CBCL Destructive ( $r = .21, p = .015$ ). Second, multiple linear regression was used, with change in CBCL Destructive score serving as the dependent variable. Independent variables were entered as follows: Step 1, treatment status (i.e., intervention vs. control group); Step 2, change in proactive parenting. In Step 3, change in negative parenting was also entered as a further test for any possible contribution of negative parenting. Table 3 shows that in Step 1, a treatment effect was found on destructive behavior, and, in Step 2, that this treatment effect was somewhat attenuated when proactive and positive parenting was introduced as a potential mediating variable. Negative parenting in Step 3 did not contribute to the overall prediction of child outcome. We tested the strength of the mediation effect of proactive–positive parenting using MacKinnon, Fritz, Williams, and Lockwood's (in press) PRODCLIN, a test recommended for small samples. This showed that proactive parenting did not significantly mediate treatment effects, although there was a suggestion of a trend in that direction ( $p = .07$ ). Instead, it appears that change in proactive and positive parenting was associated with change in child outcome in both intervention and control groups. In order to investigate further the issue of direction of influence, which was hypothesized to be primarily from parent to child, we examined associations over time in the reverse direction, namely, from child behavior at age 2 to parenting at age 3. There was no association between child destructive behavior at age 2 and negative or positive parenting at age 3, providing no evidence for a simple child effects model.

### Discussion

The findings suggest that the FCU intervention in early childhood resulted in increases in proactive and positive parenting in low-income families with toddlers at risk for conduct problems. This is in addition to reductions in child destructive behavior shown by Shaw et al. (2006). Using an

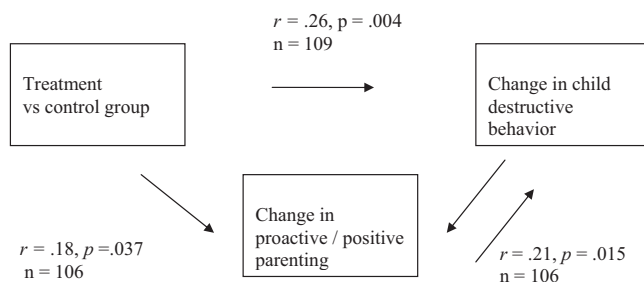


Figure 2. Associations between proactive parenting, child destructive behavior, and treatment.

intention-to-treat analysis, we found improvements from ages 2 to 3 in proactive and positive parenting, which, although modest, were significantly greater in those families randomized to intervention compared with control. Moreover, from ages 2 to 3 across the whole sample, change in parenting predicted change in child destructive behavior.

First, the findings show promising changes in proactive and positive parenting skills, following a brief family-centered intervention. Few intervention trials have examined effects on these aspects of parenting. Of importance, parenting measures were based on direct observations of behavior in the home and were validated in earlier naturalistic longitudinal studies. This impact on positive parenting occurred despite the intervention's brevity, and although many parents chose to work on parenting, proactive and positive parenting was only part of the intervention's focus.

Second, the finding that positive parenting predicts child destructive behavior, independent of the predictive effects of negative parenting, is important for advancing understanding of the very early development of problem behavior in toddlers. It extends the findings of earlier longitudinal and intervention studies (Denham et al., 2000; Gardner et al., 1999, 2003, 2006) to a younger and carefully defined risk group in the context of a prevention trial. However, as there was only a trend toward positive parenting mediating the treatment effect, it appears most likely that the current finding represents a general effect of positive parenting on the development of problem behavior rather than a specific treatment effect. In other words and as found in other nonintervention studies (Gardner et al., 1999, 2003), this association appeared not to result entirely from intervention status but to indicate a process operating in both treatment and control groups. It is important, of course, to be cautious about imputing causality in a multifaceted experimental intervention study. Although the study design involved experimental manipulation of a brief parenting intervention, proactive parenting per se was not the independent variable. However, the fact that proactive parenting predicted outcome over time, independent of negative parenting, and that prediction in the reverse direction did not hold, implies a possible causal role for parenting. Although in reality, some of the influence must be bidirectional, these data suggest that the pathway from parent to child is the stronger one.

Although proactive parenting did not fully account for the connection between intervention and outcome, this is not entirely surprising given the multifaceted nature of the intervention, which is significantly shaped by parent need and preference. This means that many parents chose to work on issues other than parenting, chose to learn about different aspects of parenting, or chose only very brief engagement, making it harder to detect treatment-mediating mechanisms common to the group. Thus, it may be that other, more individually specific mechanisms also contributed to the treatment changes seen. Of interest, there was no association between number of treatment sessions and child outcome, a finding that is consistent with the tenets of motivational interviewing, which place responsibility for change on clients' motivation for modifying their own behavior (Miller & Rollnick, 2002). Alternatively, it is also possible

Table 3  
*Summary of Hierarchical Regression Analysis Predicting Ages 2 to 3 Change in Destructive Behavior From Treatment Status and Change in Proactive-Positive Parenting*

Variable	$R^2$	$\Delta R^2$	$F_{\text{change}}$	$p$	$B$	$SE B$	$\beta$	$t$	$p$ (two-tailed)
Step 1	.07	.07	7.4	.008					
Treatment vs. control					1.8	0.64	.26	2.7	.008
Step 2	.10	.03	3.4	.07					
Treatment vs. control					1.6	0.64	.24	2.4	.016
Change in proactive parenting					0.09	0.05	.18	1.8	.07
Step 3	.11	.01	1.1	.29					
Treatment vs. control					1.6	0.64	.24	2.5	.015
Change in proactive parenting					1.0	0.05	.20	2.0	.046
Change in negative parenting					0.06	0.06	.11	1.1	.29

*Note.* The dependent variable was the change in Child Behavior Checklist 2–3 Destructive behavior from age 2 to age 3.

that the modest sample size may have precluded detection of a mediation effect, an issue we are currently investigating in a larger trial of the FCU.

The lack of change in negative parenting, and the fact that it made no independent contribution to outcome, indicates that it could not account for change in child behavior outcomes. It suggests that positive parenting exerts effects that are independent of negative parenting, something that others have argued is vital to test. Otherwise, it might simply be that high levels of positive parenting reflect mere absence of negative parenting (Patterson et al., 1992; Pettit et al., 1997). Although this is not the main purpose of the article, it is worth exploring possible reasons why negative parenting did not change. First, we know from the work of Tremblay et al. (1999) and others that aggressive toddler behavior decreases with maturity, presumably as a function of socialization. Thus, negative exchanges may be more normative at 2 and only come to reflect more entrenched, damaging cycles of coercive interaction when the child is older. A second factor that might explain lack of change in negative parenting is the modest dose of intervention received by the families. It is plausible that negative interaction patterns are more enduring, driven by negative emotion, and therefore require structured and persistent interventions to change. Future research should test this hypothesis by providing more structured follow-up interventions that focus on reducing negative parenting.

The study has a number of strengths. The Early Steps trial is novel in attempting to carry out a brief, home-based preventive intervention with 2-year-olds at high risk for conduct problems. The intervention is theory driven; is developmentally sensitive; and attempts to address some of the challenges in engaging diverse, low-income families who may be understandably suspicious about services or who lack optimism about change. The FCU addresses this by home visiting; by focusing directly on parents' motivation to change; and by tailoring intervention goals, content, and delivery to match parents' needs, using a menu-based approach. The study used a carefully defined high-risk group, based on best current knowledge from longitudinal research on early starter pathways (Shaw et al., 2000). Detailed observations of parenting were used for measuring parenting outcomes and their relationship to child behavior.

However, to avoid method overlap (Rutter, 2005), we used parent-report measures to assess outcome, bringing the advantage that these are entirely independent from the observational measures of parenting. Innovative settings for observation at home were used, which allow measurement of proactive strategies yet are sufficiently natural to have good ecological validity. Coding was carried out by trained observers who were blind to treatment status and other information about families. Sample retention was good, and those lost to follow-up did not differ from those retained.

Limitations of the study are that the follow-up is relatively brief to date; we were only able to code parenting at ages 2 and 3. Ideally, there would be data from three time points, in order to draw stronger conclusions about direction of change. The size of the sample and the variance in destructive behavior accounted for by the intervention and by positive parenting, although modest, are promising for a prevention trial with very hard-to-reach families, many of whom opted to take part only in a very brief intervention, which did not allow detailed coverage of many aspects of parenting. Although WIC services cover every U.S. state and serve a high proportion of low-income families, it is not known whether the findings are generalizable to other contexts, such as to non-WIC families or to girls. However, these limitations are being addressed in a larger multisite trial that includes girls and has greater regional and ethnic diversity.

The findings have two main sets of implications. First, they suggest that a brief, theory-driven intervention can help to improve proactive parenting skill and reduce problem behavior in families of toddlers at risk for emerging conduct problems. In addition to teaching evidence-based parenting strategies, we suggest that a number of other factors central to the FCU model make a brief preventive intervention with multiproblem families likely to be successful. These include careful attention to parent motivation, and family-centered assessment and feedback, coupled with parent choice of intervention mode and content and with home-based location of therapy. In terms of parenting strategies learned during therapy, we cautiously suggest that it is useful to include a specific focus on proactive strategies as part of a broader parenting intervention. Given that the findings are based on observational measures in the natural home envi-

ronment, it is relatively straightforward to identify and provide feedback to parents on the strategies that appear to be effective in promoting child behavior change. Clearly, for this modest trial to have policy implications, it requires replication.

However, given that the Early Steps intervention model is empirically supported, embedding the intervention in the context of the WIC service setting bodes well for future dissemination. The model fits within an ecological approach to mental health intervention (Dishion & Stormshak, 2006), whereby interventions are designed to fit within service settings that serve large numbers of families, especially those defined as being at high risk. For example, schools are an excellent site for prevention programs because access to high-risk families is guaranteed, and the setting is one in which high-risk children are easily identified. Similarly, in the United States, WIC sites are a nationally important service setting where dissemination of the Early Steps model could potentially reduce risk in a large population of high-risk families and, therefore, have a public health impact.

Second, the Early Steps trial provides opportunities to understand developmental and intervention mechanisms and test theory about origins of conduct problems. These findings present a picture consistent with predictions derived from longitudinal research. Thus, several observational studies show that, particularly in the early years, proactive and positive parenting is a significant, independent predictor of child problem behavior outcome (Gardner et al., 1999, 2003; Denham et al., 2000). The present findings, although modest in effect size, together with those from other intervention trials (Gardner et al., 2006), complement these studies of natural developmental change (Rutter, 2005). In combination, they provide evidence that proactive and positive parenting may be an important mechanism in the genesis of conduct problems.

## References

- Achenbach, T. (1992). *Manual for Child Behavior Checklist/2-3 and 1992 Profile*. Burlington: University of Vermont, Department of Psychiatry.
- Altman, D., Schulz, K., Moher, D., Egger, M., Davidoff, F., Elbourne, D., et al. (2001). The revised CONSORT statement for reporting randomized trials: Explanation and elaboration. *Annals of Internal Medicine*, *134*, 663-694.
- Campbell, S., Shaw, D., & Gilliom, M. (2000). Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology*, *12*, 467-488.
- Denham, S., Workman, E., Cole, P., Weissbrod, C., Kendziora, K., & Zahn-Waxler, C. (2000). Prediction of externalizing behavior problems from early to middle childhood: The role of parental socialization and emotion expression. *Development and Psychopathology*, *12*, 23-45.
- Dishion, T. J., & Kavanagh, K. (2003). *Intervening in adolescent problem behavior: A family-centered approach*. New York: Guilford Press.
- Dishion, T. J., & McMahon, R. (1998). Parental monitoring and the prevention of child adolescent problem behavior: A conceptual and empirical foundation. *Clinical Child and Family Psychology Review*, *1*, 61-75.
- Dishion, T. J., Nelson, S., & Kavanagh, K. (2003). The Family Check-Up for high-risk adolescents: Preventing early-onset substance use by parent monitoring. *Behavior Therapy*, *34*, 553-571.
- Dishion, T. J., & Patterson, S. (1996). *Preventive parenting with love, encouragement, and limits: The preschool years*. Eugene, OR: Castalia.
- Dishion, T. J., & Stormshak, E. (2006). *Intervening in children's lives: An ecological, family-centered approach to mental health care*. Washington, DC: American Psychological Association.
- Eyberg, S., & Ross, A. W. (1978). Assessment of child behavior problems: The validation of a new inventory. *Journal of Clinical Child Psychology*, *7*, 113-116.
- Gardner, F. (1987). Positive interaction between mothers and children with conduct problems: Is there training for harmony as well as fighting? *Journal of Abnormal Child Psychology*, *15*, 283-293.
- Gardner, F. (1994). The quality of joint activity between mothers and their children with behaviour problems. *Journal of Child Psychology and Psychiatry*, *35*, 935-948.
- Gardner, F. (2000). Methodological issues in the direct observation of parent-child interaction: Do observational findings reflect the natural behavior of participants? *Clinical Child and Family Psychology Review*, *3*, 185-199.
- Gardner, F., Burton, J., & Klimes, I. (2006). Randomised controlled trial of a parenting intervention in the voluntary sector for reducing child conduct problems: Outcomes and mechanisms of change. *Journal of Child Psychology and Psychiatry* *47*, 1123-1132.
- Gardner, F., Hutchings, J., & Lane, E. (2004). 3-8 years: Risk and protective factors; effective interventions for preventing antisocial behaviour. In D. Farrington, C. Sutton, & D. Utting (Eds.), *Support from the Start: Working with young children and families to reduce risks of crime and antisocial behaviour* (pp. 43-57). London: Department for Education and Skills.
- Gardner, F., Sonuga-Barke, E., & Sayal, K. (1999). Parents anticipating misbehaviour: An observational study of strategies parents use to prevent conflict with behaviour problem children. *Journal of Child Psychology and Psychiatry*, *40*, 1185-1196.
- Gardner, F., Ward, S., Burton, J., & Wilson, C. (2003). Joint play and the early development of conduct problems in children: A longitudinal observational study of pre-schoolers. *Social Development*, *12*, 361-379.
- Holden, G., & West, M. (1989). Proximate regulation by mothers: A demonstration of how differing styles affect young children's behavior. *Child Development*, *60*, 64-69.
- Kraemer, H., Wilson, T., Fairburn, C., & Agras, W. (2002). Mediators and moderators of treatment effects in randomized clinical trials. *Archives of General Psychiatry*, *59*, 877-883.
- MacKinnon, D., Fritz, M., Williams, J., & Lockwood, C. (in press). Distribution of the product confidence limits for the indirect effect program PRODCLIN. *Behavioral Research Methods*.
- Martinez, C., & Forgatch, M. (2001). Preventing problems with boys' noncompliance: Effects of a parent training intervention for divorcing mothers. *Journal of Consulting and Clinical Psychology*, *69*, 416-428.
- Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change*. New York: Guilford Press.
- Moffitt, T., & Caspi, A. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited pathways, among



- males and females. *Development and Psychopathology*, 13, 355–375.
- Olds, D. (2002). Prenatal and infancy home visiting by nurses: From randomized trials to community replication. *Prevention Science*, 3, 153–172.
- Patterson, G., Reid, J., & Dishion, T. (1992). *Antisocial boys*. Eugene, OR: Castalia.
- Pettit, G. S., Bates, J. E., & Dodge, K. A. (1997). Supportive parenting, ecological context, and children's adjustment: A seven-year longitudinal study. *Child Development*, 68, 908–923.
- Pettit, G. S., Laird, R., Dodge, K., Bates, J., & Criss, M. (2001). Antecedents and behavior-problem outcomes of parental monitoring and psychological control in early adolescence. *Child Development*, 72, 583–598.
- Rutter, M. (2005). Environmentally mediated risks for psychopathology: Research strategies and findings. *Journal of the American Academy of Child and Adolescent Psychiatry*, 44, 3–18.
- Shaw, D., Bell, R., & Gilliom, M. (2000). A truly early-starter model of antisocial behavior revisited. *Clinical Child and Family Psychology Review*, 3, 155–172.
- Shaw, D., Dishion, T., Supplee, L., Gardner, F., & Arnds, K. (2006). Randomized trial of a family-centered approach to prevention of early conduct problems: Effects of the Family Check-Up in early childhood. *Journal of Consulting and Clinical Psychology*, 74, 1–9.
- Shaw, D., Gilliom, M., Ingoldsby, E., & Nagin, D. (2003). Trajectories leading to school-age conduct problems. *Developmental Psychology*, 39, 189–200.
- Tremblay, R., Japel, C., Pérusse, D., McDuff, P., Boivin, M., Zoccolillo, M., et al. (1999). The search for the age of "onset" of physical aggression: Rousseau and Bandura revisited. *Criminal Behavior & Mental Health*, 9, 8–23.
- Webster-Stratton, C., Mihalic, S., Fagan, A., Arnold, D., Taylor, T., & Tingley, C. (2001). *The incredible years: Parent, teacher, and child training series: Blueprints for Violence Prevention: Book 11. Blueprints for violence prevention series* (D. Elliott, Series Ed.). Boulder, CO: Center for the Study and Prevention of Violence, Institute of Behavioral Science, University of Colorado.

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### Call for Nominations

The Publications and Communications (P&C) Board of the American Psychological Association has opened nominations for the editorships of **Psychological Assessment**, **Journal of Family Psychology**, **Journal of Experimental Psychology: Animal Behavior Processes**, and **Journal of Personality and Social Psychology: Personality Processes and Individual Differences (PPID)**, for the years 2010-2015. Milton E. Strauss, PhD, Anne E. Kazak, PhD, Nicholas Mackintosh, PhD, and Charles S. Carver, PhD, respectively, are the incumbent editors.

Candidates should be members of APA and should be available to start receiving manuscripts in early 2009 to prepare for issues published in 2010. Please note that the P&C Board encourages participation by members of underrepresented groups in the publication process and would particularly welcome such nominees. Self-nominations are also encouraged.

Search chairs have been appointed as follows:

- **Psychological Assessment**, William C. Howell, PhD, and J Gilbert Benedict, PhD
- **Journal of Family Psychology**, Lillian Comas-Diaz, PhD, and Robert G. Frank, PhD
- **Journal of Experimental Psychology: Animal Behavior Processes**, Peter A. Ornstein, PhD, and Linda Porrino, PhD
- **Journal of Personality and Social Psychology: PPID**, David C. Funder, PhD, and Leah L. Light, PhD

Candidates should be nominated by accessing APA's EditorQuest site on the Web. Using your Web browser, go to <http://editorquest.apa.org>. On the Home menu on the left, find "Guests." Next, click on the link "Submit a Nomination," enter your nominee's information, and click "Submit."

Prepared statements of one page or less in support of a nominee can also be submitted by e-mail to Emnet Tesfaye, P&C Board Search Liaison, at [etesfaye@apa.org](mailto:etesfaye@apa.org).

Deadline for accepting nominations is **January 10, 2008**, when reviews will begin.