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## Abstract

The objective of this study was to evaluate the effect of a family-centered preventive intervention, the Family Check-Up (FCU), on improving parenting skills during kindergarten and 1st grade, when children are challenged to engage in a variety of new behaviors, such as sustained attention and self-regulation of behavior in the classroom. Building on prior research and funded by the Department of Education, we tested the effect of the FCU on parenting skills during the transition to kindergarten. We predicted both direct and moderated effects of the FCU on changes in parenting, including positive parenting, monitoring/family routines, and negative parenting skills. In this registered clinical trial (NCT02289092; see CONSORT diagram in Figure 1), participants were 321 families of kindergarten children recruited from 5 public elementary schools and randomly assigned to either the FCU or to a school-as-usual control group ( $n = 164$  assigned to intervention). Families engaged in the intervention at a high rate (75%) and completed assessments about parenting skills from kindergarten to 1st grade. Results suggest that FCU effects on parenting skills were moderated by parenting contextual stress. As stress increased, so did positive effects of FCU on monitoring/family routines and negative parenting. No effects on positive parenting skills were observed. Results of this research suggest the effects of the FCU are more pronounced for high-stress families and contribute to the literature supporting adaptive, tailored approaches to intervention for high-risk children and their caregivers.

*Keywords:* parenting skills, family engagement, parenting stress, motivational interviewing

## Family-Centered Prevention to Enhance Parenting Skills During the Transition to Elementary School: A Randomized Trial

Ample research in recent decades supports a model of intervention with families that targets parenting skills and family management to reduce child risk behavior and support adjustment over time. Family-centered interventions are the most effective tools we have for reducing problem behavior and supporting healthy adjustment in children throughout the lifespan, and they have demonstrated efficacy with early childhood, middle school, and adolescent populations (Chorpita et al., 2014; Stormshak, DeGarmo, Chronister, & Caruthers, 2018). However, parent response to intervention can vary and is influenced by risk factors such as maternal depression and stress. Few studies have specifically examined parenting contextual stress, including life stressors, poverty, and financial stress, as a moderator of the intended effects on parenting skills. Developmental research suggests that contextual stress can have an impact on a variety of cognitive and emotional systems in parents, which may lead to less-effective parenting strategies, including decreased positive parenting skills and increased harsh parenting (Crandall, Deater-Deckard, & Riley, 2015). When stress is targeted during treatment for child behavior problems, outcomes improve and greater changes in child behavior occur (Kazdin & Whitley, 2003). Furthermore, parenting interventions have been shown to reduce stress and improve parental self-efficacy (Bloomfield & Kendall, 2012).

Often contradictory in the literature is the impact of variables such as stress and depression on outcomes and changes in behavior over time. Two competing theoretical models have been tested and validated across various studies. First, some research suggests that moderators such as contextual stress *reduce* constructive outcomes associated with an intervention; for example, stress limits parents' ability to uptake the intervention and to make meaningful improvements in

parenting skills. In families of children with developmental risk, parents with high levels of stress have shown reduced response or no response at all to behavioral parent skills training interventions (Osborne, McHugh, Saunders, & Reed, 2008; Strauss et al., 2012). A competing model suggests that families with high levels of stress and risk factors may experience more changes in parenting skills from interventions than would those with low contextual stress. This may be because high-stress families are more responsive to change and are motivated by their family circumstances to engage in the treatment, through improved attendance, and make subsequent improvements in their parenting (Smith et al., 2018). Alternatively, high-stress families may start out with fewer positive parenting skills and high rates of child problem behavior and thus have the potential to make greater changes in behavior over time (Pelham, Dishion, Tein, Shaw, & Wilson, 2017). In prior research using the Family Check-Up (FCU), we found that high-risk families respond more than do low-risk families to the intervention across a number of outcomes, including parenting skills (Dishion et al., 2008; Stormshak, Connell, & Dishion, 2009). The FCU's adaptive and tailored approach to intervention makes it feasible for families with a high level of stress and other risks because it can be modified to address families' high levels of contextual risk, which in turn leads to less intervention time and a greater impact of the intervention on targeted outcomes. This adaptive approach to intervention has led to a series of research studies that suggest a greater impact of the FCU on families at risk when compared with low-risk families. We tested the latter model and examined to what extent our intervention would show effects on families with high levels of contextual stress.

### **An Ecological Approach for Assessment and Treatment in Kindergarten**

The FCU is a family-centered, school-based model for intervening in, and preventing, academic difficulties and problem behavior through targeting parenting skills. Improved parenting skills

are hypothesized to lead to reductions in child problem behavior over time. This ecological family intervention model emerged from a series of randomized trials to prevent a range of problem behaviors (Dishion & Stormshak, 2007). When delivered at kindergarten entry, the FCU was associated with reductions in teacher-rated problem behavior and improved parenting skills associated with home-based learning and support in our study sample (Garbacz, Stormshak, McIntyre, & Kosty, in press).

We examined parenting skill outcomes associated with the FCU delivered at school entry to kindergarten children and families. We predicted that the FCU would be associated with improvements in parenting skills found to be significant predictors of child outcomes in prior research, including positive parenting, monitoring/family routines, and negative parenting (Stormshak, DeVargas, & Cardenas, 2017). We explored contextual stress as a moderator of treatment outcomes and on the basis of prior research, predicted that with the tailored, adaptive FCU approach families with high levels of contextual stress would have greater improvements in parenting skills than would those with low or moderate levels.

## **Methods**

### **Participants and Setting**

Participants were primary caregivers of 321 children in early elementary school. All kindergarten families across five urban elementary schools were contacted and invited to participate at school entry. Four of the five schools were Title I schools. Approximately 65% of students across the five schools were eligible for free or reduced-price lunch; 61% of families reported having at least some college education, and the average gross annual household income was between \$30,000 and \$49,999. Families who consented were randomly assigned by sex to the FCU condition or a school-as-usual control condition (see Figure 1) in a parallel design. Due to higher

rates of problem behavior in boys at this age, random assignment by sex was conducted in order to balance the control and intervention group and reduce bias. The average age of participating children at Time 1 was 5.45 years ( $SD = 0.50$ ). Further demographics are provided in Table 1. This is a registered clinical trial: The Positive Family Support Project: Partnering with Families for a Successful Transition to School (NCT02289092).

### **Study Variables**

The primary caregiver (89% mothers) reported about a range of child and family factors across two time points: kindergarten and first grade. Data were collected from families approximately one year apart. Questionnaire data were used to assess parenting skills, including positive parenting, monitoring/family routines, and negative parenting, at each time point. Positive parenting was measured by primary caregiver self-report with items from the Parenting Young Children (PARYC; McEachern et al., 2012) measure. Caregivers reported the frequency with which they engaged in positive parenting behaviors during the past month (e.g., notice and praise your child's good behavior) on a scale ranging from 1 (*never*) to 5 (*very often*). The PARYC has good psychometric properties (McEachern et al., 2012). With the study sample, the internal consistency reliability of positive parenting items was relatively low ( $\alpha = .632$ ).

Parental monitoring/family routines was measured with seven items on a scale ranging from 1 (*never*) to 5 (*very often*). Items are used to assess the frequency with which caregivers monitor their child and engage with their child in a family routine (e.g., how often do you eat a meal with him/her, how often do you check to see that your child has homework). The scale has good psychometric properties, had an internal consistency reliability of  $\alpha = .753$  with our study sample, and was developed and validated in prior research (Fosco, Stormshak, Dishion, & Winter, 2012).

Five items were used to assess how often caregivers had used negative parenting behaviors in the past month (e.g., you yelled or shouted at your child). Items that assessed negative parenting were rated on a scale ranging from 1 (*not at all*) to 5 (*very often*), demonstrated acceptable internal consistency reliability with our study sample ( $\alpha = .702$ ), and were derived from the Parenting Scale, which has been validated in prior research (Rhoades & O’Leary, 2007).

Caregivers’ perceived contextual stress was measured with 14 items from the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). Items were rated from 1 (*never*) to 5 (*very often*) and revealed how often caregivers experienced aspects of stress during the most recent month (e.g., felt nervous and stressed, felt difficulties were piling up so high that you could not overcome them). The Perceived Stress Scale has good psychometric properties (Cohen et al., 1983). Internal consistency reliability for our study sample was acceptable ( $\alpha = .843$ ).

### **Family Check-Up Intervention Protocol**

**Training of therapists and intervention delivery.** Therapists in this study were doctoral-level psychologists previously trained in the FCU through a variety of means and trained to fidelity using the COACH rating system (Smith, Dishion, Shaw, & Wilson, 2013). The FCU was delivered to families in the intervention group who had agreed to participate (75% of the intervention families). During the feedback session, families were offered a range of follow-up options, including additional sessions. Approximately half (49%) of families received additional sessions related to their goals, parenting skills, and academic support. For families in the intervention group, total treatment time averaged 204.90 minutes (range = 30.00 to 945.00), and total number of contacts averaged 4.89 (range = 0.00 to 22.00, accounting for some families that received no services). Therapists rated caregiver engagement after each contact on a scale ranging from 1 (*weak*) to 3 (*strong*), with an average of 2.57 ( $SD = 0.56$ ).

The FCU model involves three steps, a menu of intervention services that are adapted and tailored to families' needs, and a tiered service delivery model (Dishion & Stormshak, 2007). Those who engaged in the FCU received an initial interview and ecological assessment during a single visit (selected intervention). This step was followed by a feedback session with goal planning. Follow-up sessions were guided by parents' goals, were collaborative, and provided additional, brief support focused on targeted goals (indicated support). Common themes addressed during these sessions included behavioral routines in the home, positive parenting, and home-to-school planning for academic success (Dishion, Stormshak, & Kavanagh, 2011).

### **Statistical Analysis**

We examined effects of the FCU on parenting outcomes by using a mixed (multilevel) regression model that nested repeated measures within student–parent dyads, the level of random assignment to study condition. The statistical model tested for differences between conditions in change in outcomes from kindergarten (Time 1) to first grade (Time 2), accounted for autocorrelation among repeated assessments, and used all available data whether or not a subject had complete data at each grade level. The model included condition, time, and the Condition  $\times$  Time interaction, with condition coded 0 for control and 1 for treatment and time coded 0 at Time 1 and 1 at Time 2. The effect of condition is interpreted as the difference in outcome between the treatment and control conditions in kindergarten (Time 1), the effect of time is interpreted as the change in outcome from kindergarten (Time 1) to first grade (Time 2) among the control condition, and the Condition  $\times$  Time interaction is interpreted as the difference in change in outcome between the treatment and control conditions. Hedges' *g* effect sizes (Hedges, 1981) for the Condition  $\times$  Time effect are reported with values of 0.2, 0.5, and 0.8 corresponding to small, medium, and large effects, respectively.



To examine whether parent perceived contextual stress moderated intervention effects, we extended the statistical model to include parent stress and its interaction with condition, time, and the Condition  $\times$  Time term, resulting in a three-way interaction, all corresponding two-way interactions, and individual effects. The three-way interaction between parent stress, condition, and time provides evidence that the Condition  $\times$  Time effect varies by the level of parent stress. To investigate the nature of significant moderation effects, we evaluated regions of significance as recommended by Preacher, Curran, and Bauer (2006).

Analyses were conducted in SAS PROC MIXED with restricted maximum likelihood estimation (MLE) and between-within degrees of freedom approximation (Schluchter & Elashoff, 1990). MLE uses all available data and produces potentially unbiased results even in the face of substantial missing data, provided the missing data are missing at random (Schafer & Graham, 2002). We considered this assumption tenable on the basis of attrition analyses (see Results section). The statistical models assume independent and normally distributed observations. We addressed the first assumption by modeling correlated repeated measures. The outcome measure also did not markedly deviate from normality; skewness and kurtosis fell within  $\pm 2.59$ .

## **Results**

### **Descriptive Results, Baseline Equivalency, and Attrition**

Table 1 reports descriptive statistics for each study variable by assessment time and condition. Treatment and control conditions did not significantly differ on Time 1 levels of monitoring/family routines ( $p = .131$ ,  $g = -0.17$ ), positive parenting ( $p = .834$ ,  $g = 0.02$ ), or negative parenting ( $p = .241$ ,  $g = -0.13$ ). With respect to demographic characteristics, children in the control condition were more likely to have attended preschool than were those in the

intervention condition (74% vs. 56%, respectively;  $\chi^2[1, 321] = 11.13, p = .001$ ). No other Time 1 differences between conditions were observed (see Table 1).

Examination of attrition between pretest and posttest revealed 92% (150/164) of FCU participants completed a posttest assessment, compared with 87% (138/157) of control participants,  $\chi^2(1, 321) = 1.11, p = .293$ . We evaluated the extent to which attrition threatened the internal validity of this study by using a regression analysis designed to test whether outcomes were differentially affected across conditions by attrition. These analyses examined the effects of condition, attrition status, and their interaction on Time 1 outcomes. We found no statistically significant interaction between attrition and condition predicting Time 1 outcomes ( $ps > .189$ ), suggesting that the effect of attrition on outcomes did not vary by condition.

### **Intervention Efficacy and Moderation Results**

We first tested whether participants in the FCU condition experienced greater gains in parenting outcomes than did participants in the control condition. The models tested fixed effects for condition (i.e., differences between conditions at Time 1), time (i.e., gains across time for the control condition), and the Condition  $\times$  Time interaction (i.e., differences in gains between condition) for each outcome. No statistically significant Condition  $\times$  Time effects emerged (all  $ps > .100$ ), indicating that the two conditions demonstrated similar overall gains on each outcome.

Next, we tested whether parent perceived contextual stress at Time 1 moderated intervention effects on outcomes by examining Parent Stress  $\times$  Condition  $\times$  Time interactions. Table 2 summarizes moderation analysis results, which include two statistically significant three-way interactions. First, a three-way interaction indicated that the intervention effect on monitoring/family routines varied significantly by parent contextual stress ( $B = 0.25, p = .007$ ).

Results indicated more positive differences in gains between conditions for parents reporting higher levels of stress. Estimated differences between the treatment and control conditions in gains were  $-0.24$  for parents at the 5th percentile of parent stress ( $p = .010$ ),  $-0.11$  for parents at the 25th percentile of parent stress ( $p = .048$ ),  $-0.03$  for parents at the 50th percentile ( $p = .585$ ),  $0.06$  for parents at the 75th percentile ( $p = .279$ ), and  $0.19$  for parents at the 95th percentile ( $p = .043$ ).

Second, a three-way interaction indicated that the intervention effect on negative parenting varied significantly by parent contextual stress ( $B = -0.25$ ,  $p = .031$ ). Results indicated more negative differences in gains between conditions for parents with higher levels of stress (see Figure 2). Estimated differences between the treatment and control conditions in gains were  $0.21$  for parents at the 5th percentile of parent stress ( $p = .070$ ),  $0.08$  for parents at the 25th percentile ( $p = .243$ ),  $0.00$  for parents at the 50th percentile ( $p = .949$ ),  $-0.09$  for parents at the 75th percentile ( $p = .202$ ), and  $-0.22$  for parents at the 95th percentile ( $p = .060$ ).

## Discussion

Our study examined the extent to which the FCU, a family-centered intervention tested in multiple efficacy trials during early childhood and middle school, improved parenting skills during the transition to early elementary school. Results suggest that parent contextual stress significantly moderated the effect of the FCU on parenting skills, with higher stress associated with greater positive gains in both monitoring/family routines and negative parenting.

Although results of the moderation analyses also suggest that parents with low stress showed declines in parenting skills, the general trend depicted in Figure 2 suggests that as contextual stress increased, results of the intervention improved. The confidence intervals became wider at both ends of the stress continuum (e.g., low vs. high), but the overall trend favored the

intervention condition under increasing levels of contextual stress. There were no direct or moderated effects on positive parenting associated with delivery of the FCU.

There are several possible explanations for these findings. First, changes in monitoring/family routines and negative parenting may be easier to measure and to target in families. Distressed parents may be highly critical of their own parenting and more accurate in their ratings of negative parenting than of positive parenting (Herbers, Garcia, & Obradović, 2017). When parents become aware of negative or coercive parenting through feedback delivered as part of the FCU, they are likely to focus on those behaviors and try to reduce those interactions with their child. Enhancing parent awareness of specific parenting strategies that are ineffective, such as negative parenting and low monitoring, may lead to improvements in those skills while having no effect on positive parenting, which is consistent with findings from other research (Parent, McKee, Rough, & Forehand, 2016). Second, parenting interventions that are associated with improvements in positive parenting often use direct observations rather than self-report as a means of measuring these behaviors. For example, randomized trials testing the efficacy of the FCU have primarily used direct observation as the primary assessment modality to identify effects on positive parenting (Dishion et al., 2008).

The FCU's key intervention components make it well suited for at-risk children and caregivers when risk is defined broadly, including contextual stress in families and behavioral risk in children. First, the FCU is tailored to families' strengths and areas in need of improvement. Second, the FCU capitalizes on parents' motivation to change through the use of motivational interviewing and family engagement. Third, the individualized discussion of supports for parents as a means of reaching their goals systematically addresses barriers and promotes collaboration and relationship building with the family interventionist. Finally, the

FCU involves regular family contact grounded in a family wellness model. These features are critical to support caregivers who report high levels of contextual stress, mental health problems, and other forms of risk (Dishion & Stormshak, 2007). When caregivers feel supported and have the knowledge and skills needed to change their parenting practices, they are reinforced and empowered through the FCU model. Positive and supportive feedback builds a sense of parenting self-efficacy, which may itself be stress reducing.

### **Limitations and Future Directions**

Limitations of this study include a reliance on self-report measures of parenting skills and low reliability of the positive parenting scale, which may have limited our ability to test effects on positive parenting. It is challenging for parents to report about positive parenting, and most feel they use positive parenting strategies often. Direct observational methods may improve the intervention effects of the FCU on this construct. Another limitation of this study was that most of the participants were mothers. Future research should also examine the role of fathers and the impact of the FCU on fathers' parenting skills.

Future research should build on these findings by examining the role of stress in conjunction with other potential moderators of intervention efficacy, such as depression and marital conflict. Schools are increasingly partnering with mental health agencies and social workers to provide on-site support for children and families. The FCU can be administered by trained school personnel or counselors as a brief intervention for children and families at school entry and may be delivered as an indicated or universal intervention in the school context. Training school personnel to target high-risk families may increase the impact of school-based mental health services on family and child outcomes.

## REFERENCES

- Bloomfield, L., & Kendall, S. (2012). Parenting self-efficacy, parenting stress and child behavior before and after a parenting programme. *Primary Health Care Research & Development*, 13(4), 364–372. doi: 10.1017/S1463423612000060
- Chorpita, B. F., Daleiden, E. L., Ebesutani, C., Young, J., Becker, K. D., Nakamura, B. J., . . . Starace, N. (2014). Evidence-based treatments for children and adolescents: An updated review of indicators of efficacy and effectiveness. *Clinical Psychology: Science and Practice*, 18(2), 154–172. doi: 10.1111/j.1468-2850.2011.01247.x
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385–396. doi: 10.2307/2136404
- Crandall, A., Deater-Deckard, K., & Riley, A. W. (2015). Maternal emotion and cognitive control capacities and parenting: A conceptual framework. *Developmental Review*, 36, 105–126. doi: 10.1016/j.dr.2015.01.004
- Dishion, T. J., Shaw, D. S., Connell, A. M., Gardner, F., Weaver, C. M., & Wilson, M. N. (2008). The Family Check-Up with high-risk indigent families: Preventing problem behavior by increasing parents' positive behavior support in early childhood. *Child Development*, 79(5), 1395–1414. doi: 10.1111/j.1467-8624.2008.01195.x
- Dishion, T. J., & Stormshak, E. A. (2007). *Intervening in children's lives: An ecological, family-centered approach to mental health care*. Washington, DC: APA.
- Dishion, T. J., Stormshak, E. A., & Kavanagh, K. (2011). *Everyday parenting: A professional's guide to building family management skills*. Champaign, IL: Research Press.
- Fosco, G. M., Stormshak, E. A., Dishion, T. J., & Winter, C. (2012). Family relationships and parental monitoring during middle school as predictors of early adolescent problem

- behavior. *Journal of Clinical Child and Adolescent Psychology*, 41(2), 202–213. doi: 10.1080/15374416.2012.651989
- Garbacz, S. A., Stormshak, E. A., McIntyre, L. L., & Kosty, D. (in press). Examining family engagement and family educational involvement in a randomized controlled trial of the Family Check-Up. *School Psychology Quarterly*.
- Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational and Behavioral Statistics*, 6, 107–128. doi: 10.2307/1164588
- Herbers, J. E., Garcia, E. B., & Obradović, J. (2017). Parenting Assessed by Observation versus Parent-report: Moderation by Parent Distress and Family Socioeconomic Status. *Journal of Child and Family Studies*, 26(12), 3339–3350. doi: 10.1007/s10826-017-0848-8
- Kazdin, A. E., & Whitley, M. K. (2003). Treatment of parental stress to enhance therapeutic change among children referred for aggressive and antisocial behavior. *Journal of Consulting and Clinical Psychology*, 71(3), 504–515. doi: 10.1037/0022-006X.71.3.504
- McEachern, A. D., Dishion, T. J., Weaver, C. M., Shaw, D. S., Wilson, M. N., & Gardner, F. (2012). Parenting Young Children (PARYC): Validation of a self-report parenting measure. *Journal of Child and Family Studies*, 21, 498–511. doi: 10.1007/s10826-011-9503-y
- Osborne, L. A., McHugh, L., Saunders, J., & Reed, P. (2008). Parenting stress reduces the effectiveness of early teaching interventions for autistic spectrum disorders. *Journal of Autism and Developmental Disorders*, 38, 1092–1103. doi: 10.1007/s10803-007-0497-7
- Parent, J., McKee, L.G., Rough, J., & Forehand, R. (2016). The association of parent mindfulness with parenting and youth psychopathology across three developmental

- stages. *Journal of Abnormal Child Psychology*, 44, 191-202. doi: 10.1007/s10802-015-9978-x
- Pelham, W. E., Dishion, T. J., Tein, J.-Y., Shaw, D. S., & Wilson, M. N. (2017). What doesn't work for whom? Exploring heterogeneity in responsiveness to the Family Check-Up in early childhood using a mixture model approach. *Prevention Science*, 18(8), 911–922. doi: 10.1007/s11121-017-0805-1
- Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interaction effects in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, 31(4), 437–448. doi: 10.3102/10769986031004437
- Rhoades, K. A., & O'Leary, S. G. (2007). Factor structure and validity of the parenting scale. *Journal of Clinical Child and Adolescent Psychology*, 36(2), 137–146. doi: 10.1080/15374410701274157
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, 7, 147–177. doi: 10.1037/1082-989X.7.2.147
- Schluchter, M. D., & Elashoff, J. D. (1990). Small-sample adjustments to tests with unbalanced repeated measures assuming several covariance structures. *Journal of Statistical Computation and Simulation*, 37, 69–87. doi: 10.1080/00949659008811295
- Smith, J. D., Berkel, C., Hails, K. A., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2018). Predictors of participation in the Family Check-Up program: A randomized trial of yearly services from age 2 to 10 years. *Prevention Science*, 19(5), 652–662. doi: 10.1007/s11121-016-0679-7
- Smith, J. D., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2013). Indirect effects of fidelity to



- the Family Check-Up on changes in parenting and early childhood problem behaviors. *Journal of Consulting and Clinical Psychology*, 81(6), 962–974. doi: 10.1037/a0033950
- Stormshak, E. A., Connell, A. M., & Dishion, T. J. (2009). An adaptive approach to family-centered intervention in schools: Linking intervention engagement to academic outcomes in middle and high school. *Prevention Science*, 10, 221–235. doi: 10.1007/s11121-009-0131-3
- Stormshak, E. A., DeGarmo, D. D., Chronister, K. M., & Caruthers, A. (2018). The impact of family-centered prevention on self-regulation and subsequent long-term risk in emerging adults. *Prevention Science*, 19(4), 549–558. doi: 10.1007/s11121-017-0852-7
- Stormshak, E. A., DeVargas, E., & Cardenas, L. (2017). Parenting practices and the development of problem behavior across the lifespan. In J. E. Lochman & W. Matthys (Eds.), *The Wiley handbook of disruptive and impulse-control disorders* (pp. 307–322). New York, NY: Wiley.
- Strauss, K., Vicari, S., Valeri, G., D’Elia, L., Arima, S., & Fava, L. (2012). Parent inclusion in early intensive behavioral intervention: The influence of parental stress, parent treatment fidelity and parent-mediated generalization of behavior targets on child outcomes. *Research in Developmental Disabilities*, 33(2), 688–703. doi: 10.1016/j.ridd.2011.11.008

Table 1

*Descriptive Statistics for Study Variables and Demographic Characteristics by Time and Condition*

Variable	Time 1 (kindergarten)		Time 2 (first grade)	
	FCU	Control	FCU	Control
Monitoring/family routines, <i>M</i> ( <i>SD</i> )	3.6 (0.5)	3.7 (0.4)	3.6 (0.5)	3.7 (0.4)
Positive parenting	3.3 (0.7)	3.3 (0.6)	3.2 (0.6)	3.2 (0.6)
Negative parenting	0.8 (0.6)	0.9 (0.5)	0.8 (0.5)	0.9 (0.5)
Parent stress	1.5 (0.6)	1.4 (0.5)		
Child age	5.5 (0.5)	5.4 (0.5)		
Child gender, %				
Female	46	46		
Male	54	54		
Child race/ethnicity, %				
White	59	58		
Multiple races/ethnicities	21	24		
Hispanic/Latino	13	13		
Asian	2	3		
Black/African American	2	1		
Unknown	2	1		
Pacific Islander	0	1		
Language child speaks at home, %				
English	90	87		
Spanish	8	10		
Other	2	3		
Child received special school services <sup>a</sup>	17	16		
Child attended preschool	56	74		

*Note.* FCU = Family Check-Up. <sup>a</sup>Special school services included individualized education programs and behavior support plans. The sample included 164 families in the FCU condition and 157 families in the control condition.

Table 2

*Tests of Parent Stress Moderation of Intervention Effects on Change in Parent-Reported Monitoring/Family Routines, Positive Parenting, and Negative Parenting Outcomes*

Model parameter		Monitoring/family routines	Positive parenting	Negative parenting
Fixed effects	Intercept	3.70*** (0.03)	3.28*** (0.05)	0.91*** (0.04)
	Condition	-0.07 (0.05)	0.02 (0.07)	-0.08 (0.05)
	Time	-0.04 (0.03)	-0.08 (0.05)	0.02 (0.04)
	Condition × Time	-0.02 (0.05)	0.01 (0.07)	-0.01 (0.06)
	Parent stress	-0.16* (0.07)	-0.19 (0.10)	0.55*** (0.08)
	Parent Stress × Condition	-0.01 (0.09)	0.06 (0.13)	0.01 (0.10)
	Parent Stress × Time	-0.01 (0.07)	0.10 (0.10)	-0.06 (0.09)
	Parent Stress × Condition × Time	0.25** (0.09)	0.17 (0.13)	-0.25* (0.11)
Variances Subject		0.11*** (0.01)	0.23*** (0.03)	0.10*** (0.01)
Residual		0.08*** (0.01)	0.17*** (0.01)	0.13*** (0.01)
<i>p</i> -values	Parent Stress × Condition × Time	.007	.199	.031
<i>df</i>	Parent Stress × Condition × Time	283	282	283

*Note.* Table entries show parameter estimates with standard errors in parentheses except for *p*-values, and degrees of freedom. Condition was coded 0 for control and 1 for treatment. *df* = degrees of freedom.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

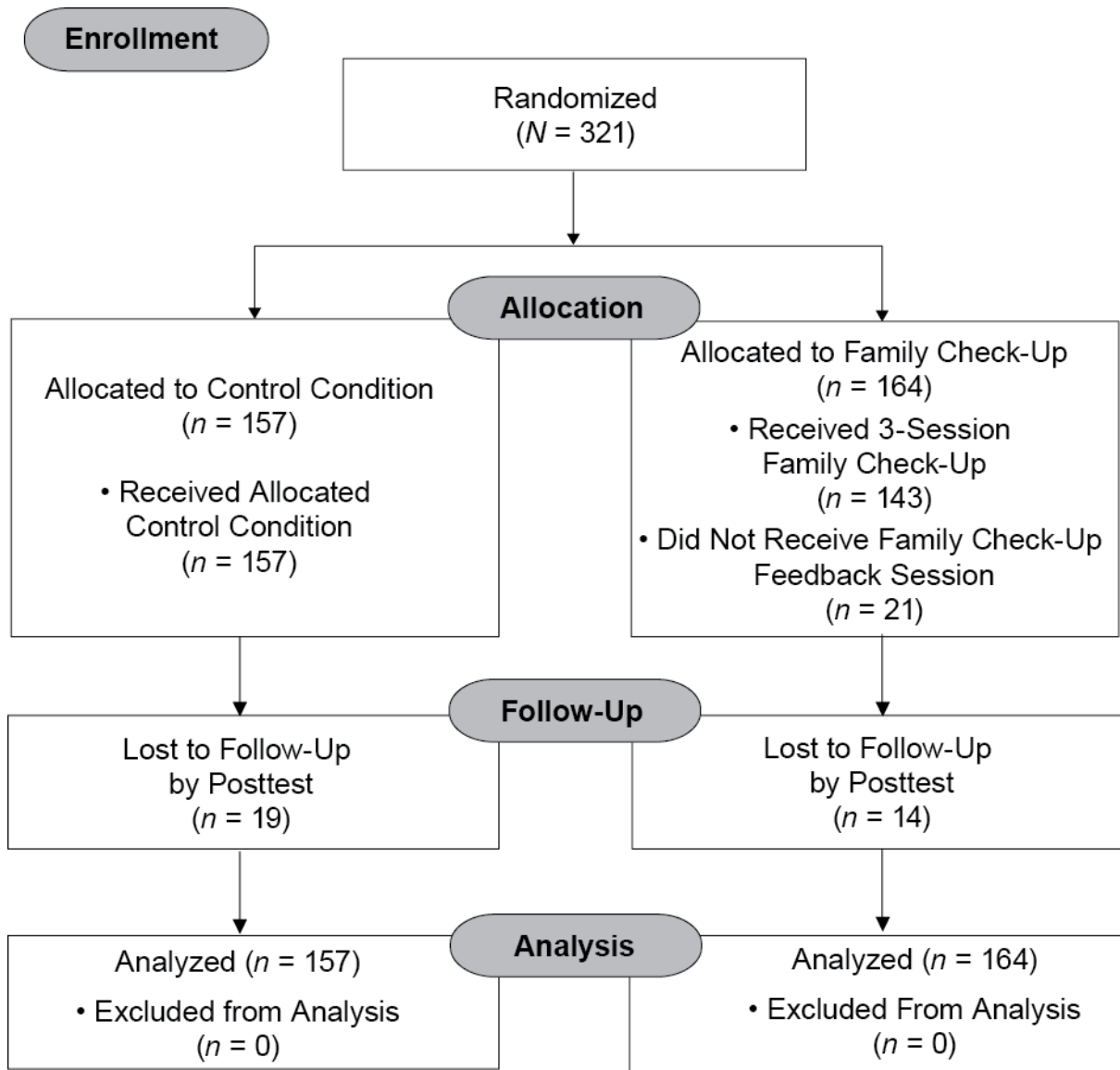
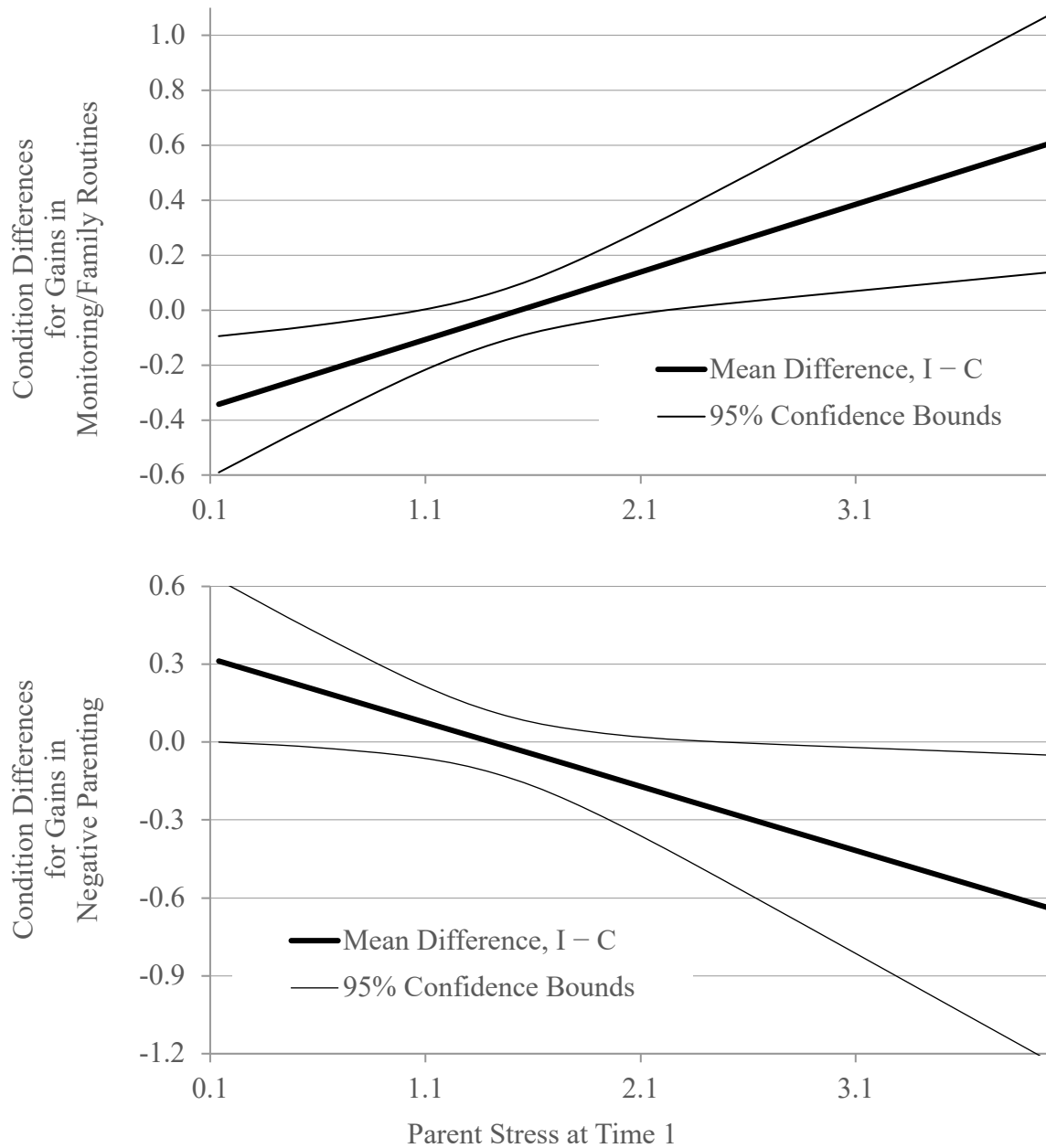


Figure 1. Participant enrollment.



*Figure 2.* Condition differences for gains (treatment gains minus control gains) in monitoring/family routines (top panel) and negative parenting (bottom panel) as a function of contextual stress. The middle heavy line shows the mean difference in gains between conditions across the range of stress. The outer lines depict the 95% confidence bound on the mean difference. Statistically significant differences between conditions occur when both confidence intervals fall either above or below zero.