

Two Wrongs Don't Make a Right: Decreasing Negative
Parenting for Positive Results

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Abstract

Previous studies show that, on average, lower SES parents exhibit fewer positive and more negative parenting behaviors than higher SES parents. Researchers have used parenting interventions to successfully improve outcomes for economically disadvantaged children. Whether or not positive and negative parenting behaviors are equally malleable to change from intervention is less clear. In the present study 123 parents and children were recruited from Head Start and randomly assigned to either participate in a dual-generation intervention or the control group. The present study found improvements only in observed negative parenting. However, positive parenting behaviors did not change. Implications of these findings are discussed, along with suggestions for future studies and interventions.

Two Wrongs Don't Make a Right: Decreasing Negative Parenting for Positive Results

Children who grow up in lower socioeconomic status (SES) environments are at risk for many undesirable developmental outcomes, as well as related behavioral problems. When compared to children from middle and higher SES families, lower SES children, on average, demonstrate lower performance in scholastic endeavors, display more behavior problems, have poorer social adjustment, and score lower on cognitive testing. The literature also suggests that higher SES households provide advantageous parenting practices, including sufficient positive parenting, as well as the absence of negative parenting, which play a key role in shaping these child outcomes. Since there appears to be a link between both parenting styles and child outcomes between lower and higher SES families, there may be a way to improve both issues. In order to address this disparity, researchers must identify what the disadvantages are, why they happen, and how such disadvantages can be prevented or rectified through intervention. The obstacles that lower SES children face can set these children on a downward trajectory that may be extremely difficult to overcome, impacting employment opportunities, leading to possible reliance on public assistance, and in some cases even leading to criminal activity.

Class Disparity Impacts Children

On average, the scholastic achievements and language use of lower SES children fall below those of peers from middle and higher SES families (e.g., Walker, Greenwood, Hart, & Carta, 1994). Although these generalizations don't hold true for all lower SES children, research demonstrates that the discrepancies are real and have significant long-term effects. One area of note is the apparent educational divide between different economic classes, leading to disparate levels of achievement.

Children attending schools with a high concentration of disadvantaged students are less likely to perform well on standardized measures of academic achievement than those from more affluent schools. Willie (2001) surveyed student demographic records and achievement test scores from 60 schools, classifying the schools by the percentage of student body that received meal assistance. Schools where at least 80% received meal assistance were classified as predominately low-income; those with fewer than 20%, as affluent; and all other schools were labeled as mixed SES. Scores on the Metropolitan Achievement Test (MAT), which assessed mathematics, science, language, reading, and social studies, were compared among schools based on their poverty status. Students from the affluent schools had the highest proportion of MAT scores above the national normed average while students from the low-income schools had the fewest above-average scores on the MAT. Lower scores on standardized achievement tests have been associated with poor life outcomes, such as lower college admission rates, given that a common criteria for college admissions is scores on academic achievement tests.

It is not only academic levels that are disparate across the economic spectrum. In another sample from diverse economic backgrounds, Pettit, Bates and Dodge (1997) found that SES positively correlated with both social skills and academic performance in kindergarten and sixth grade. Social skills and academic performance were assessed using teacher checklist ratings at both time periods, though academic performance was augmented by grades and achievement test scores in sixth grade. SES negatively correlated with teacher-rated externalizing behavior problems in both kindergarten and sixth grade. Good grades predict numerous life outcomes, while poor social skills can impact all areas of future success, including employment.

Although to some it may appear that the problem lies in the quality of the schools in poorer areas, studies also show disadvantages in children at the beginning of their formal

education. In a study by Aikens and Barbarin (2008), children from lower SES families had significantly lower academic test scores than children from higher SES families in their early school years. A nationally representative sample of children from across a range of economic backgrounds differed significantly on reading skill upon entering kindergarten. Reading skills were assessed during kindergarten, first grade, and third grade using adapted portions of several well-known, standardized measures of reading, language, and educational achievement. As SES increased, so did students' improvements in scores on an assessment of reading skills. The difference between the rate of improvement for higher SES children compared to lower SES children increased over time. Aikens and Barbarin (2008) strongly advise encouraging more parental involvement and home literacy, as well as improving schools and social services, to strengthen academic outcomes for lower SES children.

Disadvantaged children not only have lower academic scores while in school than do their higher SES peers, but are also at increased risk for school failure and dropout. High school students from low-income families are five times more likely to drop out of school than those from more affluent families (Chapman, Laird, Ifill, & KewalRamani, 2011). Dropout rates can predict a myriad of negative later outcomes, including unemployment, health problems, and higher likelihood of criminal activity and welfare reliance (U.S. Department of Health and Human Services, 2009). The aforementioned studies highlight the weighty consequences of academic underperformance, the inescapable cost of inaction, and the importance of interventions to improve such child outcomes. Poor academic performance and behavior and related problems do not simply appear as these children advance in school, but are prevalent before the start of kindergarten.

Disadvantages Begin Early in Life

While many public schools in lower income geographic regions are grossly underfunded and do not enable underprivileged children to catch up to their higher SES peers, those facts alone cannot explain the performance differences observed between lower and higher SES children (e.g., Aikens & Barbarin, 2008; Greenwood et al., 1992). Problems with academic and cognitive performance become apparent before disadvantaged children begin kindergarten. Long before lower SES children ever enter a classroom, they have not been provided the opportunity to develop many of the skills required to succeed in school. For example, children as young as 18 months of age from lower SES families are significantly more likely to have low scores on a test of early language and cognition (Landry, Smith, Miller-Loncar, & Swank, 1997).

Not only can SES-related performance disadvantages be found at a young age, but those early skills predict performance in school later on. Walker and colleagues (1994) found that SES measured at 36 months predicted child language use both at 36 months and in third grade. The language use set by 36 months of age additionally predicted not only third grade language use, but also scores on standardized measures of verbal ability, reading, and spelling. Building early language skills can be seen as a strong foundation for later language and academic performance and even behavior, and apparently cannot be started at too young an age.

Morgan, Farkas, Hillemeier, and Maczuga (2009) observed that children from lower SES families also displayed poorer behavioral responses to attention-draining and difficult tasks. The abilities for a child to inhibit inappropriate responses and continue to work on a task are extremely important cognitive skills, particularly in the classroom. At 24 months, lower SES children were twice as likely to display learning-related behavior problems. While children were administered the Bayley Short Form—Research Edition, a standard test of cognitive skills,

observers covertly rated the child's behavioral responses to the task using the Behavior Rating Scale-Research Edition. They found that SES predicted child frustration and persistence, but especially inattention, disinterest, and lack of cooperation.

Ayoub et al. (2009) used a form of the Bayley test of cognitive skills similar to Morgan et al. (2009), but reported differences in cognitive performance between lower SES children and the normed sample in a longitudinal prospective study. Low-income children were administered the Bayley's at 14, 24, and 36 months of age. Not only did lower SES children have low scores, but they actually decreased in cognitive skills between 14 and 36 months compared to the normed sample. By three years of age, the average score for lower SES children was a standard deviation below the norm for their age. This suggested an increase in disadvantages for lower SES children. Within this low income sample, additional indicators of lower SES status (including government assistance, unemployment, and maternal education) conferred additional risk for low scores on the Bayley's. This additional risk also predicted slower cognitive development as the children aged.

Although academic and classic cognitive tests administered to children are a useful measure of child outcomes, such tests could also reflect the perceived value placed on education and learning in the home, and its effect on subsequent child engagement during educational activities. To address concerns that less-educated parents may pass on to their children a negative attitude towards education, which could affect child performance on academic and cognitive tests, researchers would require an assessment tool that is in no way reminiscent of educational activities or tests. To address this potentially confounding factor, Stevens, Lauinger, and Neville (2009) investigated child cognitive performance with a different type of task— one that was entirely unlike an academic test. While children listened to audio recordings of children's stories,

the researchers used EEG to measure selective auditory attention in children from higher or lower SES families. Neural measures of attention can also be sensitive to cognitive mechanisms that are not revealed by traditional cognitive, behavioral tests. Children whose mothers had not completed any college showed a significantly less-robust neural attention response compared to children whose mothers had attended some college. Numerous other researchers have documented neurocognitive disparities associated with SES (e.g., Farah et al., 2006; Hackman & Farah, 2009; Noble, McCandliss, & Farah, 2007). Clearly the impact of lower SES on cognitive functioning begins very early in life, and determining which environmental influences are at fault is imperative.

Influence of Parenting

Researchers have sought to discover factors that contribute to subsequent problems faced by young children. Heckman (2006), an economist, observed that the source of disadvantages for lower SES children can be directly linked to the quality of the parenting that children receive early in life. While there are additional environmental factors related to SES that could also influence the development of lower SES children prior to kindergarten entry, evidence suggests that parenting is a primary developmental influence on all children (e.g., Greenwood et al., 1992). In studies that examine parenting independent of SES, optimal parenting has been repeatedly associated with higher cognitive, language, and social skills, and fewer problem behaviors. High quality cognitive stimulation at home early in life is highly predictive of later academic and cognitive performance (Hackman, Farah, & Meaney, 2010). In discussing aspects of parenting, a distinction can be made between the benefits of high rates of positive parenting and low rates of negative parenting. The most influential aspects of parenting can then be

targeted for intervention. Many researchers have attempted to analyze parental behaviors and their influences.

Positive and Negative Parenting

In their landmark studies on parent and child interactions, Hart and Risley (1992) observed that, in very young children, more parental restrictions and prohibitions, or language intended to correct children or stop children engaging in an activity during play were negatively correlated with child IQ and vocabulary at 36 months. Participants were selected from families across economic strata with the intention of representing American families to capture interactions between mothers and their 6-36 month old children. Observers came to the homes of families once per month for one hour of observation time over the course of 2 1/2 years. Parents were instructed to do what they would have done if the observers had not been present. Hart and Risley also noted correlations between a young child's measured intelligence and how often a mother was in the same room with her child, the number of words said to her child, the diversity of words said to her child, how frequently the mother joined in with her child's activity, and how often she repeated or extended the child's speech. Only the negative parent propensity to place restrictions displayed a profound effect on child outcomes despite infrequent occurrences.

The findings of Hart and Risley (1992) were supported by Landry et al. (1997), who found that frequent maternal restrictive behaviors with children predicted a lower score on cognitive tasks. Using in-home observations, Landry and colleagues noted that the number of restrictions a mother placed on the child predicted slower progression of cognitive and social skills through 40 months; this was compared to the national norm for these standardized measures. However, out of the two highly positive parenting measures reported, shared attention and warm responsiveness, only shared attention was a good predictor of later cognitive skills.

The authors commented that the most consistent and striking result was the strength and pervasive influence of parental restrictiveness to dampen the development of all reported child outcomes.

Webster-Stratton and Hammond (1998) used measures of both positive and negative parenting to investigate child outcomes. Negative parenting measures included critical statements, harsh and critical discipline, and negative affect. Positive parenting included parental nurturance, exemplifying discipline competence, and a measure including affects, praise, and positive physical behaviors. All negative parenting measures predicted both child conduct problems and social competence. Two out of the three positive parenting measures predicted child social competences, and only one measure predicted child conduct problems. Negative parenting behaviors were consistent predictors of child behavior problems and social competence, but positive parenting behaviors were less reliable predictors.

Interactions parents have with their children before entering kindergarten can predict both kindergarten and first grade behavior problems across the economic strata. Pettit, Bates, and Dodge (1993) found parenting influences on child behavior problems similar to Webster-Stratton and Hammond (1998), showing that increased negative parenting behaviors had a stronger impact on behavioral problems than did decreased positive parenting. Researchers observed parent and child interactions in the home and reported on positive parenting behaviors (positive control, quality listening, teaching, and initiating social interactions) as well as negative parenting behaviors (coerciveness and intrusiveness). The observed negative parenting measures of coercive control and maternal intrusiveness predicted increased behavioral problems in kindergarten and first grade. Children's behavior problems in first grade were apparent even after controlling for the children's kindergarten teachers' ratings, suggesting an increase in behavior

problems over time. Observed positive parenting behaviors were not significant predictors of teacher behavior ratings at any time point. Because observed positive parenting behaviors and impression-based positive parenting had little to no influence on child outcomes, the authors concluded that negative parent interactions were the strongest predictor of later child behavior problems.

Pettit et al. (1997) continued to study their initial sample longitudinally, reporting the same parent interactions observed, as well as self-report measures, captured before children began kindergarten to predict outcomes in both kindergarten and 6th grade. The authors reported both negative parenting, in the form of harsh discipline, as well as positive parenting constructs that included parental warmth, involvement, calm discussion, and proactive teaching. Harsh discipline measured prior to kindergarten entry was predictive of all kindergarten and first grade outcomes except for externalizing behavior problems in kindergarten. Because early harsh discipline did predict 6th grade behavior problems, this suggests an existing, but delayed effect of harsh discipline on child behavior problems. The relationship between positive parenting and child outcomes was generally less clear and more difficult to interpret. Parental warmth predicted academic performance at both time periods, but behavior problems only in 6th grade. Parental involvement also predicted academic performance at both time points, but also kindergarten social skills and 6th grade behavior problems. Calm discussion was predictive of all child outcomes except for kindergarten academic achievement. Early proactive teaching predicted all child outcomes except for 6th grade social skills. This study confirms the beneficial effects of positive parenting, as well as the long-term detrimental effect of negative parenting behaviors.

While positive parenting is clearly important, negative parenting frequently shows a more consistent and reliable prediction of child outcomes. It should be noted that positive and negative

parenting behaviors (e.g. parental warmth and spanking, respectively) are not correlated (Deater-Deckard et al., 2011). That is, parents who show many positive parenting behaviors will not necessarily display fewer negative parenting behaviors. . Not only are positive and negative parenting behaviors not correlated in many parents, but high levels of positive parenting do not buffer against the impact of negative parenting on child outcomes. When Lee, Altschul, and Gershoff (2013) directly compared the influence of maternal warmth to spanking, spanking was a better predictor of child aggression. Spanking at age 1 predicted child aggression at age 3, and spanking at age 3 predicted progressive increases in aggression by age 5. This increase in child aggression from spanking was not moderated by even high parental warmth. Children who receive high parental warmth, but also who are frequently spanked, will still show increasing levels of child aggression. It appears that negative parenting may be more influential and consistently impactful than positive parenting.

Parenting in Lower SES Households

Many studies have reported differences in parenting practices across SES families. Positive parenting tends to be less prevalent, while negative parenting tends to occur at higher rates in lower SES households compared to their higher SES counterparts. Hart and Risley (1992) found many differences in parenting behaviors between lower and higher SES mothers of 6-36 month old children. Lower SES mothers placed more prohibitions on their children's play, were less frequently in the same room with their children, joined in their children's activity less often, spoke fewer general words, spoke fewer unique words to their children, responded less to their children, taught less often, asked their children fewer questions, and engaged in less balanced turn-taking. The frequency of parental prohibitions strongly correlated with negative child outcomes, and also negatively correlated with positive parenting behaviors that

demonstrated active listening and shared attention. Parents who prohibited children's behavior were also less likely to actively listen to their children by paraphrasing, repeating or extending children's statements, or to encourage children's speech by asking questions. The pattern of parenting behaviors observed in lower SES mothers was negatively correlated with child IQ tested at 36 months.

The problems associated with lower SES parenting continue after childhood. Poor outcomes from lower SES children who experience non-optimal parenting often demonstrate behavioral difficulties through adolescence. For example, Lempers, Clark-Lempers, and Simons (1989) found that lower SES adolescents who reported inconsistent discipline and low positive parenting from their parents also reported more depression, delinquency, and drug use. This increased the negative impact of economic hardship on adolescents.

Parenting Buffers Low SES Risk

It is important to note that the pattern of parenting behaviors for lower SES households reported above is a statistical generalization. Not all lower SES parents demonstrate such parenting behaviors. Those who engage in more positive parenting practices, as well as fewer negative parenting practices, can mitigate the negative impact of poverty on child outcomes. When lower SES parents exhibit behaviors similar to those typically associated with higher SES households, the effects of economic disadvantage on child outcomes are reduced. While Pettit et al. (1997) found that lower SES parents tended to exhibit more harsh discipline strategies and less parental warmth, involvement, and calm discussions with their children, supportive parenting buffered against adversity-related developmental risks for child behavioral problems and poor school adjustment. An interaction between supportive parenting, which predicted 6th grade externalizing behavior problems, and SES revealed that supportive parenting was related

to significantly fewer behavior problems only in children from lower SES households. This held true after controlling for child sex, ethnicity, kindergarten adjustment, and main effects of both SES and supportive parenting. The interaction between supportive parenting, behavior problems, and SES was not found in high SES families because they had fewer behavior problems. Children from lower SES families are likely more sensitive to supportive parenting because they have fewer overall protective environmental factors.

Consistent with Pettit et al. (1997), Morgan et al. (2009) showed that a mother's education level was a consistent predictor of both parenting quality (including high warmth and low harsh discipline) and parental support. After controlling for mother's education, harsh discipline and low parental nurturance explained a significant portion of learning-related behavior problems found in disadvantaged 24 month-olds. Additionally, supportive parenting buffered some risk for developing learning-related behavior problems.

Additional studies have demonstrated that nurturing parenting can provide protective effects in lower SES children. Ayoub et al. (2009) found an increasing negative influence of SES on the formation of cognitive skills at 14, 24, and 36 months of age. However, this effect was mediated separately by cognitive stimulation at home and by shared attention observed between parent and child, suggesting parenting as a protective factor against disadvantage. Increased parental sensitivity and stimulation partially mediated the negative impact of lower SES on expressive language, verbal comprehension, and receptive verbal concepts in three-year-olds (Raviv, Kessenich, & Morrison, 2004). A common thread throughout the parenting literature reviewed here suggest that if the parenting behaviors of lower SES families can be improved, outcomes for lower SES children could also see significant improvement.

Not only is there a strong relationship between parenting behaviors and child outcomes, but parenting is on a short list of SES environmental factors that can be realistically modified. If parents can increase their positive parenting and decrease negative parenting, perhaps they can provide their children with protection from some of the negative outcomes associated with lower SES environments. Parenting interventions can be used to educate and train parents and to set children on track toward more positive outcomes and greater success in social, educational, and behavioral aspects of their lives. Understanding the malleability of both positive and negative parenting will allow for creation and refinement of effective parenting interventions and education that can result in improved child outcomes.

Parenting Interventions

Many intervention studies have looked at changes in parenting and have shown that parenting is malleable. Parenting interventions can target both parents and children (dual-generation), or interventions can target parents alone. Parenting improvements can be measured and analyzed in a variety of ways. Many intervention studies report measurements of positive parenting, negative parenting, or a composite measure that combines both positive and negative parenting behaviors, either aggregated or on a continuum. Because parenting behaviors are expected to improve after parents participate in an intervention, how parents change is worthy of investigation. Desirable parenting behaviors could increase, undesirable behaviors could decrease, or both positive and negative parenting behaviors could improve uniformly. A review of several intervention studies raises some more specific considerations: whether positive and negative parenting behaviors are equally malleable, or whether parents are more or less likely to add positive parenting behaviors to their repertoire as they are to cease negative parenting

behaviors. The following are some examples of parenting interventions that have successfully improved parenting and child outcomes.

Broad Improvements in Parenting

Ayoub et al. (2009) analyzed 2764 low-income mother-infant dyads who were randomly assigned as controls or as participants in the dual-generation, multi-year Early Head Start program (EHS). EHS addresses many aspects of child development, including family support and improving parenting through education. Parents who participated in the intervention improved on home-observation measures of shared attention and cognitive stimulation. Improvements were observed in child cognitive skills following the intervention, and these improvements were mediated by the changes observed in parents. Much of the positive effect of the Early Head Start program on children's cognitive development occurred through the changes it effected in parenting (Ayoub et al., 2009). It should be noted that there was not much detail provided about the specific observations of parenting behaviors that comprised aggregated measures of shared attention and cognitive stimulation. The measures could have been composed entirely of positive parenting behaviors or a combination of positive behaviors and reversed-scored negative behaviors. Therefore, it is not possible to be certain if the intervention succeeded at improving child cognition by increasing positive parenting or by decreasing negative parenting, or a combination of both.

DeGarmo, Patterson, and Forgatch (2004) administered a parent-only intervention intended to improve boys' behaviors. This intervention consisted of 14 weekly meetings where the parenting topics and skills introduced were scaffolded, building on topics addressed the previous week. These topics included early and appropriate response to misbehavior in order to decrease more coercive forms of discipline. The intervention also taught parents to use positive

reinforcement to encourage desirable child behaviors. Parenting changes were evaluated at 6, 12, 18, and 30 months after baseline testing. Only a composite construct of observed parenting was reported, including four measures of positive parenting and three measures of negative parenting. This parenting composite improved following participation in the intervention, but changes were not observed until the 12-month follow-up. Parenting improvements were mostly maintained through the final 30-month follow-up.

Improvements in Positive and Negative Parenting

Webster-Stratton (1998) administered a parenting intervention designed to benefit children between ages 3-7 who had been referred for conduct problems. Parents met in groups for two hours weekly, for eight to nine weeks. The intervention used video examples and role-playing to instruct parents about discipline, handling misbehavior, setting limits, helping children learn and problem-solve, praise, and incentivizing child behavior. Parents provided self-reports of their parenting behaviors and also participated in observed interactions with their children. Self-reported subscales of discipline included two measures of positive parenting (positive style and appropriate limit-setting), three measures of negative parenting (harsh, negative physical strategies, and negative verbal strategies), and one composite measure of consistency in discipline. Observations of parent behavior were coded from videotaped parent-child dyads recorded in the participant's home, and included two aggregated measures of positive parenting, three measures of negative parenting (harsh parenting, critical statements, and issuing commands), and two composite measures including parental valence and a general impression of discipline competence. All together, the authors reported four scales of positive parenting, six scales of negative parenting, and three scales that included both positive and negative parenting. The self-reported parenting data contained mixed results. Although most measures of parenting

showed significant improvements, one positive and one negative self-report measure did not change from pre to post-test for the intervention group. All observation-derived measures of parenting improved except for positive supportive parenting. However, this study did not directly compare increases in positive parenting to decreases in negative parenting. The measures reported were neither equivalent nor comparable; negative parenting tended to be specific and discrete, measures of positive parenting were all broadly grouped.

Gardner, Burton, and Klimes (2006) implemented a 14-week version of the intervention that Webster-Stratton (1998) employed, intending to improve conduct problems in children between 2 and 9 years. Gardner et al. (2006) reported five parent measures: parent sense of competence, parent depression, parent self-reported discipline, observed positive parenting strategies, and observed negative parenting strategies. Self-reported discipline strategies were reported as a composite measure composed of both positive and negative discipline subscales. Broadly, self-reported discipline did improve following the intervention, especially on the subscale that captured negative discipline strategies (including harsh and coercive discipline). Observations of parents and children were also videotaped at home during both structured and unstructured activities, yielding 50 minutes of coded interactions. Coded observations from this video dyad were divided into positive and negative parenting behaviors. Positive parenting included proactive discipline, shared attention, and praise. Negative parenting included threatening, hitting, yelling, and issuing commands. Parents were also given a questionnaire measuring parent discipline styles. Following participation in the intervention, negative parenting decreased and positive parenting increased. However, the improvements in both positive and negative parenting were not equal. Changes in negative parenting had a larger Cohens's *d* effect size ($d = .74$) than did positive parenting ($d = .38$). Not only did parents improve, but their

improvement was linked to improvements in child behavior problems. Increases in positive parenting behaviors partially mediated improvements in child behavior problems. However, parent improvements in confidence or mood did not appear to impact child outcomes. Despite the intervention having the strongest impact on negative parenting behaviors, the researchers did not conduct a mediation analysis of changes in negative parenting behaviors on child improvements.

Summary of Interventions

Given the evidence presented above, parenting appears to be malleable to change through interventions. How, and in what direction, parents are improving is less certain. Ayoub et al. (2009) and DeGarmo et al. (2004) both found changes in combined measures of parenting, but did not report specifically if participants were increasing positive parenting behaviors or decreasing negative parenting behaviors. Interventions that report all parenting behaviors in aggregate unfortunately cannot contribute to understanding the extent to which positive parenting behaviors are increasing or negative parenting behaviors are decreasing.

Webster-Stratton (1998) and Gardner et al. (2006) both found that parenting improved following their interventions, for which positive and negative parenting behaviors were reported separately. Not all aspects of parenting changed uniformly, and many varied in strength and consistency. All aspects of negative parenting observed by Webster-Stratton (1998) improved, while only half of observed positive parenting saw significant improvement. Gardner et al. (2006) found stronger effects of intervention on decreasing negative parenting behaviors than on increasing positive parenting behaviors. This suggests inconsistencies in the changes found in positive and negative parenting behaviors that has not been well-explored in the intervention literature. Improvements in negative parenting appears to be a more reliable outcome, but more

research is needed to better understand or support this phenomena. Additional research could help clarify if there is a replicable difference between changes in positive and negative parenting behaviors, as well as how that difference might manifest. This could perhaps be in the form of effect size differences or by reliably showing significant change. Analyzing and reporting positive and negative behaviors separately could fill this gap by quantifying an increase in positive parenting behaviors apart from a decrease in negative parenting behaviors.

Recent Research on Parenting Interventions

Neville et al. (2013) designed and compared two dual-generation interventions to improve lower SES children's attention, and potentially their prospects for school readiness and academic success. By comparing two intervention groups in addition to a control group, the researchers were able to provide more robust information about where to focus attention and resources for optimal child outcomes. The authors were able to determine if more time should be spent directly improving children's outcomes by working more with the children, or if more time should be spent working with the parents of children. Both interventions took place over eight weeks. The Attention Boost for Children (ABC) program was primarily child-focused with a small component supporting parents. Children received focused training on specific attention skills 40 minutes per day, four days per week for eight weeks. Parents met for training three times over the course of the eight week program. The second intervention, Parents and Children Making Connections – Highlighting Attention (PCMC-A), used a less child-intensive approach, with a stronger emphasis on parent training than ABC. In PCMC-A, parents and children both received weekly training for two hours for eight weeks. Children in the control group participated in Head Start as usual, receiving no additional parent or child intervention.

Evaluations of parents from all experimental conditions included parenting stress, turn-taking, and parenting confidence; evaluations of children included child behavior, social skills, intelligence, and brain function for attention (Neville et al., 2013). Self-reported parenting stress was significantly reduced for the PCMC-A group compared to the control group following the intervention. Observed parent turn-taking improved for the PCMC-A parents compared to both the ABC and control parents. Child behavior, measured using The Preschool and Kindergarten Behavior Scales, Second Edition (PKBS-2), improved for both social skills and externalizing behavior problems for children in PCMC-compared to children in either ABC or the control condition. Children's nonverbal intelligence, measured by the Stanford-Binet 5th Edition (SB-5) nonverbal IQ scale, improved more for children in the PCMC-A intervention than children in ABC or the control group. Brain function for selective attention in children significantly improved for children in PCMC-A compared to the other two groups, neither of whom made significant improvements in this neural measure of selective attention. The latter two results involving child cognition were particularly striking, given that the ABC intervention involved much more time devoted to direct training of children and their cognitive functioning than the PCMC-A intervention did. These results suggest that when the intent of the intervention is to improve outcomes for lower SES children, the intervention should be designed to engage parents and leverage the power of the home environment.

Present Study

The present study examined changes in both positive and negative parenting behaviors as a function of the successful intervention mentioned previously, PCMC-A (Neville et al., 2013). The curriculum for PCMC-A was designed to improve the parenting behaviors of caregivers via evidence-based strategies (see below for a description of strategies used in the intervention). The

ABC intervention was determined to be less effective and was subsequently discontinued. Therefore, the present study included a partially overlapping sample of only participants assigned to PCMC-A or the control group. Neville et al. (2013) did not examine the same measures of parenting as did the present study. The objective of the present study was to distinguish if changes in parenting were increasing positive parenting behaviors, decreasing negative parenting behaviors, or both. Given that the prior literature suggests that positive and negative parenting behaviors are independent phenomena, they will be analyzed separately. We took a regression approach to investigate our intervention's effectiveness at increasing positive parenting behaviors and decreasing negative parenting behaviors. The present study hopes to contribute to a better understanding of the nature of parent behavioral changes through intervention.

Hypotheses

The current study evaluated changes in parenting behaviors in parents from lower SES environments following a dual-generation intervention. Two hypotheses were tested:

1. We hypothesized that positive parenting behaviors, measured by praise directed toward the child and the number of teaching moments between parent and child, would increase following the intervention. Gardner et al. (2006) not only found improvements in positive parenting behaviors, but that those improvements correlated with improved child behavior.
2. We hypothesized that negative parenting behaviors, measured by ignoring, interrupting, issuing commands, and utilizing sentences that were semantically unrelated to what the child said, would decrease after participation in the intervention. Gardner et al. (2006) also found that their intervention improved negative parenting behaviors—and with a stronger effect

than for positive parenting behaviors. In question was whether this general finding would replicate with a different set of measures indexing positive and negative parenting.

Method

Participants

Participants were 123 child and parent pairs. Children were between 3 and 5 years of age. Families were part of a larger study evaluating the efficacy of PCMC-A. Children were prescreened by Head Start teachers, as well as by research assistants, to exclude children diagnosed with neurological disorders, those taking psychoactive medications, or children with Individualized Family Service Plans. Families meeting inclusion criteria were invited to participate in the study. They were then randomly assigned to participate in either the PCMC-A intervention or control groups, with the control group participating only in Head Start as usual.

Sixty-one child and parent pairs participated in the intervention and 62 were in the control group. Most caregivers reported the child's ethnicity as White/Caucasian (61.0%); 17.1% of the sample reported more than one ethnicity; 4.1% as Black/African American; 5.7% as American Indian, 0.8% as Asian American, and 11.3% did not respond or responded "unknown." All families were living at or below the poverty level. SES was obtained using the Hollingshead index (Hollingshead, 1975), a common measure of socioeconomic status. Participant background information is shown in Table 1. There were no significant differences in SES, gender, or ethnicity between the intervention and control groups.

PCMC-A Intervention

The parent classes for Parents and Children Making Connections— Highlighting Attention (PCMC-A) were led by a highly trained interventionist and consisted of a small group format, with four to six families in each group. Adults met for two hours, one evening per week,

for 8 weeks. All caregivers with parental roles, such as parents, grandparents, or foster parents, were invited to attend the intervention. While parents met, both children participating in the intervention and their siblings were in a separate room for dinner and child care. Children were pulled out of the childcare room by the child interventionist as a group for the child training component of the intervention for 45 minutes each week. To make attendance as easy as possible for the families, dinner and childcare were provided. If a parent had to miss a group session, one-on-one make-up sessions were scheduled with the interventionist. Parents also received weekly calls from the interventionist to provide support, clarification of strategy implementation, and to answer questions that arose about the curriculum between sessions.

Instruction for parents was conducted with reference to research-based techniques that included encouraging the parents to be goal-oriented and self-reflective, and utilized relevant everyday experiences that caregivers reported. Interventionists fostered a cooperative learning environment between themselves and the participating caregivers. Instructional materials and curriculum were inclusive of, and adaptive to, the individual learning styles of the parents.

PCMC-A was adapted from Linking the Interests of Families and Teachers (LIFT) curriculum (Reid, Eddy, Fetrow, & Stoolmiller, 1999). The parenting program was composed of nine core components aimed at decreasing familial stress and improving child cognitive development and performance. Caregivers were provided with problem-solving strategies to regulate family stress by providing children with a more reliable environment; these strategies included creating consistent, predictable family routines and schedules that were easy for children to understand and anticipate. Caregivers were taught to become aware of, and avoid, stressful power struggles with their children. Instruction was designed to increase parents'

awareness of their children's emotional states in order to better scaffold their children's development of emotion regulation skills.

PCMC-A also emphasized the importance of nurturing, responsive parenting, and positive adult modeling in optimal child development. Curriculum encouraged parents to utilize strategies designed to increase positive involvement, to increase their positive social interactions, and to appropriately model language for their children. Parents were instructed to engage their children in more age-appropriate communication by using clear, developmentally meaningful requests or statements, and supplementing pictures for big concepts where appropriate. Caregivers were provided tools to help children build skills by breaking tasks down into smaller, more manageable steps and reinforced positive behaviors by utilizing praise and specific noticing. Negative behaviors were addressed by encouraging increased consistent and contingency-based discipline, including time-outs and the removal of privileges.

The primary goal of the child component of PCMC-A was to improve child attention and emotional self-regulation. Children learned to encourage and model positive social interactions, which complimented the parent communication training. Children participated in multi-sensory exercises to improve focused attention, cope with distractions, and increase emotional awareness and self-regulation of emotional states. The interventionist helped children learn to recognize their own thoughts and feelings, facilitating increased internal control of the child's own behavior. Interventionists used research-based practices, including teacher scaffolding and progressive instruction. To strengthen the child's integration of these lessons, the parents were taught about the development of attention and self-regulation, particularly with regard to the attention training their children were receiving.

Measures

A comprehensive battery of behavioral tasks was administered to children and parents for the larger efficacy study of PCMC-A. The current study focused on the videotaped play exercise between children and caregivers. This play dyad allowed for evaluation of parent-child interactions and parental nurturance both prior to and upon completion of the eight-week intervention period. The play time also served to give the child a cognitive break during the behavioral testing appointment. The parent and child were taken to a soundproof room with a variety of toys available. The parent was asked to engage in free play with the child. The experimenter then left the room. The toys in the room were chosen with the intention of providing parents with both conceptual and verbal teaching moments. The videos were transcribed by trained research assistants and coded for parent/child language use and parent interactions. A research assistant noted on the transcript every time the caregiver or child completed a behavior of interest. Seven minutes of both language and interaction codes were quantified using the Systematic Analysis of Transcripts (SALT-8) analysis software.

In order to capture objective, quantified parenting behaviors, researchers coded parent and child interaction behaviors using a modified combination of two coding systems that were both input into the Systematic Analysis of Transcripts (SALT-8) software. The native SALT coding was used to quantify instances of the parent interrupting the child, coding interactions that took place during minutes 2-8. A modified version of the Behavior-Language Code (Delaney, Ezell, Solomon, Hancock, & Kaiser, 1997) described by Kaiser, Tapp, Solomon, Delaney, Ezell, Hester, and Hancock (2000) was used during minutes 1-7 to evaluate how often the parent praised, taught, ignored, commanded, or used semantically unrelated utterances (speaking off topic) with the child. Composite measures of both positive and negative parenting

behaviors were examined separately. The composite measure of positive parenting averaged instances of praise and teaching. The composite measure of negative parenting averaged instances of ignoring, interrupting, issuing commands, and using semantically unrelated sentences. Details about why and how the composite measures were used can be found in Appendix A. Preliminary analyses on the individual measures comprising parenting composites indicated that effects were distributed across all measures. No single measure appeared to be driving the present results.

Exploratory analyses were conducted to determine whether each measure violated test assumptions. Both the measures of positive parenting behaviors and negative parenting behaviors were positively skewed. However, after transforming the data to fit test assumptions, the transformed regression analyses confirmed the results of the untransformed regressions. Therefore the original variables will be interpreted here. The process used to fit test assumptions can also be found in Appendix A.

Analytic Strategy

Hierarchical linear regression analyses were used to examine whether parenting behaviors changed more in those caregivers who participated in the intervention. Regression was chosen to test for both main effects and for possible interactions. Two stepwise regression analyses were conducted to predict post-test scores. One contained positive parenting behaviors, and the other contained negative parenting behaviors. Step 1 of each model included observed parenting behavior at pre-test (mean-centered). Step 2 included dummy codes indicating if participants belonged to the intervention group or to the control group (0 indicated the control group and 1 indicated the intervention group). Step 3 included the interaction between pre-test observations and intervention status.

Results

To differentiate between the influence of intervention on positive parenting behaviors and negative parenting behaviors, they were analyzed separately. An unexpected finding was that positive nurturing behaviors, composed of praise and teaching did not change significantly as a function of intervention, $R^2 = .007$, $F(2, 120) = .397$, $p = .673$. When testing for an interaction between pre-test positive parenting and intervention status, the overall model was still not a significant predictor of post-test positive parenting, $R^2 = .033$, $F(3, 119) = 1.349$, $p = .262$. Means for both positive and negative parenting can be found in Table 2.

As hypothesized, the use of negative parenting behaviors (including ignoring, interrupting, issuing commands, and utilizing semantically unrelated sentences) was significantly reduced for parents in the intervention compared to the control group, when controlling for pre-test score. The overall model predicting post-test negative parenting from pre-test negative parenting and participation in the intervention was significant, $R^2 = .381$, $F(2, 118) = 36.29$, $p < .001$. A significant amount of additional variability was explained by the interaction between pre-test negative parenting and participation in the intervention, R^2 Change = .039, $F(1, 117) = 7.88$, $p = .006$. In general, participants who began the intervention with high negative parenting also decreased negative parenting more than participants who showed fewer negative parenting behaviors at pre-test. Table 3 shows beta weights and significance of the interaction.

The present study sought to evaluate whether a parent-focused intervention could improve parenting behaviors in lower SES families compared to a control group. Parenting behaviors were divided into positive parenting behaviors and negative parenting behaviors and analyzed to see if intervention changes were different for positive and negative parenting behaviors. There was a different result for positive and negative parenting behaviors. Although

positive parenting behaviors showed no significant increase, negative parent behaviors significantly decreased for intervention parents compared to controls. These results suggest that PCMC-A, an evidence-based parent and child intervention program, significantly decreased many negative parenting behaviors that have previously been associated with non-optimal child outcomes.

Discussion

The aim of the current study was to extend the existing literature regarding the effectiveness of parenting interventions and to evaluate their effect on positive and negative parenting behaviors separately. Lower SES parents of 3-5 year old children were randomly assigned to either a dual-generation intervention or a control condition. Parents were observed interacting with their children before and after the intervention period. To better understand the changes parents were making, positive and negative parenting behaviors were reported and analyzed separately. Observed positive parenting behaviors, which included teaching and praising, did not change as a function of the intervention. However, negative parenting behaviors, which included ignoring, interrupting, issuing commands, and utilizing semantically unrelated sentences in response to child utterances, successfully decreased following the intervention. These results demonstrated that PCMC-A reduced negative parenting behaviors. These findings have implications for interventions targeting families from lower SES environments, as discussed below.

Comparison of Results to Prior Literature

Positive Parenting. While improvements in combined parenting behaviors were present in the aggregated measure of parental nurturance, an unexpected finding was that positive nurturing behaviors did not increase after participating in the intervention. While most

intervention studies that report positive and negative parenting separately find at least some increases in positive parenting, many have reported discrepancies between increases in positive parenting and decreases in negative parenting. In their observation-based measures of parenting, Webster-Stratton (1998) reported a change in only one of their two measures of positive parenting, yet significant results for all observed measures of negative parenting. Finding consistent changes in negative parenting, but not in positive parenting, is reflected in the present results. Gardner et al. (2006) reported changes in negative parenting behaviors that were larger than in positive parenting behaviors. While they did report a change in positive parenting, it is unclear whether or not they corrected for multiple comparisons. Gardner ran five tests on parenting (including observed positive and negative parenting, discipline styles, depression scale, and parenting confidence), and the effect size for negative parenting was higher than for positive parenting. If the data were not corrected for multiple comparisons, their intervention results might be consistent with the results of the present study.

Negative Parenting. After participating in the present intervention, caregivers decreased negative parenting behaviors, incidences of ignoring, interrupting, commanding, and responding to children with semantically unrelated sentences. This finding is consistent with the literature, which frequently reports reductions in negative parenting behaviors following parenting interventions. Webster-Stratton (1998) found decreases in both self-reported and observational measures of harsh discipline, physical negative discipline, critical statements, commands, and harsh parenting behaviors. Gardner et al. (2006) found particularly strong effects of intervention on decreasing negative parenting behaviors. Unfortunately, Gardner et al. (2006) did not formally acknowledge or explore why their interventions had a stronger impact to reduce negative parenting than they did to increase positive parenting.

Positive Versus Negative Parenting

Together with previous literature, these findings suggest that similar parenting interventions might have greater success decreasing negative parenting behaviors than increasing positive parenting behaviors. Not only might negative parenting be more malleable, it appears to have a greater impact on child outcomes. When comparing the influence of both positive and negative parenting to child outcomes, Lee et al. (2013) found that even high levels of positive parenting were not sufficient to buffer against the impact of negative parenting. Both Hart and Risley (1992) and Pettit et al. (1993) mentioned the relatively stronger influence of negative parenting on the later child outcomes of IQ and the development of behavior problems. Of negative parenting, in the form of placing prohibitions on toddlers' play, Hart and Risley (1992) commented that, "... the strong relationship between even low proportions of *prohibitions* and unfavorable child outcomes suggests that prohibitions have a toxic function beyond simply displacing questions and other high quality contentive categories of parent utterances" (p. 1103). Landry et al. (1997) and Webster-Stratton and Hammond (1998) both reported consistent correlations between negative parenting and child outcomes. Only some aspects of positive parenting correlated with child outcomes, while most did not. Therefore, interventions that increase positive parenting behaviors may have less of an impact on child outcomes than those that decrease negative parenting behaviors.

Inconsistencies with Positive Parenting. It is difficult to compare correlations between parenting and child outcomes to parenting malleability through intervention. There is a vast variety and diversity of parenting measures used throughout the literature. However, two studies used can serve as an example of disparities found when comparing positive parenting results to negative parenting results. Both studies used essentially the same measures of parenting, one in a

correlational study predicting child outcomes from parenting (Webster-Stratton & Hammond, 1998), and the other to evaluate parenting improvements following an intervention (Webster-Stratton, 1998). They found that the positive parenting measures that predicted child behavior problems were different than the positive parenting measures that increased as a function of intervention. This might point to a problem in measurement, or perhaps the positive parenting that changed following intervention might not have been the aspects of positive parenting that would have had the greatest impact on child outcomes. Future intervention research should measure and report increases in positive parenting separately from decreases in negative parenting. Of measures reported in both studies, only negative parenting was consistently significant. That is, only negative parenting was both predictive of child outcomes *and* malleable to change. Not one positive parenting measure reported across studies was both a consistent predictor *and* changed as a function of intervention. Negative parenting is the more crucial and consistent predictor of child outcomes and is also more malleable to change through interventions such as PCMC-A.

Implications for Future Interventions. Although it may appear that one could recommend abandoning the instruction of positive parenting in future interventions, in light of these findings, that conclusion is outside the scope of the present study. Given a multi-faceted intervention, such as PCMC-A, it is unclear which specific activities yielded the overall observed effect of reducing negative parenting behaviors. decreases in negative parenting are probably driving desirable outcomes *and* negative parenting is more malleable to intervention, does not mean that the optimal way to achieve this end is by solely focusing on negative parenting in interventions. Additional intervention research is needed to test nuances between different intervention strategies that emphasize positive parenting, negative parenting, or both.

It is important for future parenting or dual-generation interventions to include strategies to decrease negative parenting behaviors, whichever those prove to be. This is both because negative parenting appears to be a better predictor of child outcomes than does positive parenting, and because these findings demonstrate that negative parenting is especially malleable to intervention. Intervention research often fails to report decreases in negative parenting adequately, either by including it with positive parenting in a composite measure (e.g., DeGarmo et al., 2004), or by shifting the focus away from improvements in negative parenting (e.g., Gardner et al., 2006). Given the present and other findings, utilizing proven techniques to reduce negative parenting, as well as reporting them, is a crucial component of both parent-only and dual-generation interventions.

Study Limitations

Despite the changes in parenting behaviors observed in the current study, specifically reductions in negative behaviors, the measures used may not fully represent parenting changes that occur as a function of intervention. The current study is limited by the relatively short, in-laboratory parent/child interaction measure. The play dyad served as a break for the child in the middle of the behavioral cognitive testing appointment and is thus unlikely to fully capture the range of behaviors one might see at home or in other naturalistic settings. Longer observations in a more naturalistic setting would likely yield a more complete and robust picture of parenting practices. Many studies investigating parenting changes via intervention utilize in-home observations of the environment and parent/child interactions (e.g., Gardner et al. 2006; Webster-Stratton, 1998). Some intervention studies observe longer interactions between parent and child (e.g., Gardner et al., 2006; DeGarmo et al., 2004; Webster-Stratton, 1998), providing longer sample times than our brief video dyad. However, the current findings that negative parenting

behaviors improve with intervention is consistent with previous studies that have used both longer, more naturalistic observations, as well as with studies using similarly short video dyads (e.g., Ayoub et al., 2009).

Another potential limitation of the current study is the scope of the observed behaviors. Only verbalizations were included in the video coding system, such that affect, tone, demeanor, and other non-verbal indicators of positive and negative parenting behaviors were not coded for analysis. Information regarding other, non-verbal aspects of parent-child interactions could provide valuable additional information about changes in parenting behaviors that may occur as a function of PCMC-A. It is possible that positive parenting behaviors might be particularly elusive to observations that are limited to verbalizations. Without non-verbal measures, the only measures of positive parenting behaviors available were teaching and praising. Still, many studies with more robust observational measures have failed to find preferential results for positive parenting behaviors compared to negative parenting behaviors. Future studies should evaluate non-verbal as well as verbal parenting behaviors to better understand how positive and negative aspects of parenting change, and to be able to evaluate which aspect(s) can affect child outcomes.

Finally, all participants in the current study were recruited from Head Start, a program designed to help underprivileged children. However, families have to apply for Head Start and be able to get their children to preschool on a daily basis. Additionally, families who participated in this study, in both control and intervention groups, had to be able to come to the university on at least four separate days for pre- and post-testing appointments. Parents in the intervention group also had to commit to attending weekly parenting groups for eight weeks. These commitments could have self-selected participants who were more motivated to improve than the population at

large. These families therefore may not be representative of all families participating in Head Start and these findings may not generalize to lower income families who do not participate in Head Start or other early education programs. Future studies could evaluate the efficacy of dual-generation programs for parents and children beyond Head Start communities.

Many of the limitations of the current study could be improved in future research by implementing longer and more naturalistic observations. However, the present findings are supported by extensive parenting literature that has found inconsistent improvements in positive parenting. Research that reports negative parenting separately almost universally also report reliable results. Despite any measurement concerns, the findings are consistent with the literature and changes in negative parenting behaviors observed in the present study were consistently strong.

Conclusions

The present study evaluated changes in positive and negative parenting behaviors following participation in a PCMC-A intervention designed, in part, to improve parenting behaviors. The results showed a significant decrease in many negative parenting behaviors that have previously been associated with non-optimal child outcomes. This, as well as the studies referenced previously, demonstrate that negative parenting practices not only have a more significant impact on child outcomes, but are also more malleable, and therefore more likely to be influenced by parent interventions. There is also some evidence that improving positive parenting practices can be beneficial, and will certainly give parents alternative strategies as they attempt to decrease negative practices, improving their overall parenting. It has been shown by many studies that parent interventions in lower SES populations can improve a variety of parenting practices, such that child outcomes may also be significantly improved. By refining

future studies to better define and report the various types of parenting behaviors, better interventions can be designed for optimal improvements in child outcomes. Reporting both positive and negative improvements in parenting is valuable to better understand how interventions are directly affecting specific parenting behaviors. Interventions are expensive, as well as time- and resource-intensive to administer. Therefore, designing and administering interventions on a broad scale that will be the most likely to succeed is imperative. Knowing which aspects of parenting are more malleable and which will contribute to the maximum desired outcomes will inform the development and revision of future interventions in real-world settings.

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Appendix A

Table 1. Summary of child background characteristics. Socioeconomic status coded using the Hollingshead index (Hollingshead, 1975).

| | PCMC-A | Control |
|---------------------------|---------------|---------------|
| <i>N</i> (Male) | 61 (21) | 62 (26) |
| Child Age in Years (SD) | 4.51 (.58) | 4.44 (.53) |
| Parent Age in Years (SD) | 30.04 (5.89) | 31.1 (6.2) |
| Socioeconomic status (SD) | 28.44 (10.98) | 29.63 (10.03) |

Table 2. Summary of pretest and posttest mean scores and standard deviations (SD) for PCMC-A and control groups for positive parenting and negative parenting.

| | PCMC-A | | | Control | | |
|--------------------|--------|------|------|---------|------|------|
| | N | Pre | Post | N | Pre | Post |
| Positive Parenting | 61 | 1.77 | 2.72 | 62 | 2.50 | 3.27 |
| <i>SD</i> | | 1.47 | 3.96 | | 2.25 | 3.55 |
| Negative Parenting | 60 | 5.25 | 2.41 | 61 | 7.88 | 6.75 |
| <i>SD</i> | | 4.35 | 2.17 | | 5.31 | 5.75 |

Note. Negative parenting presented in the table contains unadjusted means.

Table 3. Regression analyses estimating effects of intervention on negative parent behaviors.

| | <u>Negative Parenting</u> | | | |
|------------------------------|---------------------------|------|---------|-------|
| | B | SE-B | β | P |
| Constant | 5.97 | 0.49 | | <.001 |
| Pre-test Negative Parenting | .587 | 0.09 | 0.61 | <.001 |
| Intervention | -3.32 | 0.71 | -0.34 | <.001 |
| Intvn x Pre-test Interaction | -0.41 | 0.14 | -0.26 | .006 |
| Model R ² | 0.42 | | | <.001 |

Appendix B

When coding how many parent behaviors occurred in 7 minutes, individual measures were observed rarely. For example, most parents only issued commands a few times during 7 minutes of play, and many issued no commands during at all. This left the data for individual measures of parenting behaviors positively skewed, with observations clustering around 0. Therefore, we were not able to analyze the parent behaviors individually and still conform to regression assumptions. Preliminary regressions run on the individual parenting measures suggested that all negative parenting measures improved with intervention, while none of the positive parenting measures improved following intervention. Parenting behaviors were therefore combined into positive parenting and negative parenting constructs both based on existing literature and because the intervention attempted to increase one set of behaviors (positive parenting), while decreasing the others (negative parenting).

After combining parent behaviors into two composite measures of positive and negative parenting, observations no longer clustered at zero, though they were still fairly positively skewed, and regression residuals were still somewhat heteroscedastic. To correct for the remaining skewness, the scores were transformed by applying a logarithmic function to each composite measure (after uniformly adding 1 to both composite measures to adjust for any zero scores because those could not be transformed by logarithm).

A few participants had regression standardized residuals larger than 2.1, and were at risk for violating the assumption of homoscedasticity of residuals, even after data transformation. Eight participants were dropped from analysis for this reason. (All removed participants had previously been noted as potential outliers during exploratory analysis of normality prior to transformation.) Following both transformation and exclusion of those outliers, the standardized

residuals were normally distributed, as were the composite measures, and all measures conformed to test assumptions for linear regression. The results of the regression before and after transformation were the same, however, so the untransformed variables were reported to ease interpretation.