Positive & Negative Parenting: Are the Same Children Susceptible to the Effects of Each?

By

MADELINE R. OLWERT
THESIS

Submitted in partial satisfaction of the requirements for the degree of

MASTER OF SCIENCE

in

Child Development

in the

OFFICE OF GRADUATE STUDIES

of the

UNIVERSITY OF CALIFORNIA

DAVIS

Approved:

_____

Jay Belsky, Chair

_____

Daniel E. Choe

_____

Ross A. Thompson

Committee in Charge

2025

Abstract

Developmental research finds that children can display differential susceptibility to environmental experiences and exposures, with additional work exploring whether such susceptibility is domain-general or domain-specific. It remains unclear whether children who display high or low susceptibility to one valence of environmental exposure (e.g., positive) always display high or low susceptibility to the opposite valence (e.g., negative) within the same domain (e.g., parenting), as differential susceptibility theory implies. Applying an influence statistics approach (DFBETAS), the current study addresses this empirical and theoretical gap by testing whether children who are more or less susceptible to the effects of positive parenting on child socioemotional functioning are the same children who are more or less susceptible to the effects of negative parenting. This research utilizes longitudinal data from NICHD study of Early Child Care and Youth Development (boys = 52.4%; White = 81.5%), including observed parenting at multiple timepoints during infancy and early childhood and teacher-reported socioemotional functioning in kindergarten through 3rd grade. Consistent with parenting literature, greater exposure to positive parenting predicted better socioemotional functioning and greater exposure to negative parenting predicted poorer socioemotional functioning. Further, the results indicate that most children were similarly influenced by positive and negative parenting, whether a lot or a little, but some were noticeably mixed in their susceptibility to the two dimensions of parenting. These patterns align with prior work regarding the generality versus specificity of susceptibility. Implications of these findings for future research as well as targeted prevention and intervention efforts are discussed.

Positive & Negative Parenting: Are the Same Children Susceptible to the Effects of Each?

Differential susceptibility theory posits that individuals vary in susceptibility to both positive and negative developmental experiences and environmental exposures (Belsky, 1997; 2007). Since the theory's origination, research has identified genotypic, endophenotypic, and phenotypic factors that influence children's environmental susceptibility (Belsky & Pluess, 2009) while raising the issue of whether susceptibility to environmental influences operates in a domain-general or domain-specific manner (Belsky & Pluess, 2013a; Zhang et al., 2021). It thus remains unknown whether individuals with high susceptibility to one valence of environmental exposure (e.g., positive) display high susceptibility to the opposite valence (e.g., negative) within the same domain (e.g., parenting), as the theory implies. This issue arises because many studies of differential susceptibility combine the two types of exposure into a single, bipolar index, including positive and negative parenting quality (e.g., Hentges et al., 2023; Pluess & Belsky, 2010; Sayler et al., 2022; Stoltz et al., 2017; Zhang et al., 2021). Such measurement precludes examination of whether individuals might be highly susceptible to a positive exposure but not to a negative one— or vice versa. The current investigation addresses this empirical and theoretical gap by examining whether the same children are more or less susceptible to the effects of separately measured positive and negative parenting on socioemotional functioning.

Person X Environment Interaction Frameworks

It is well recognized that developmental trajectories are influenced by the interaction between the traits of individuals and aspects of their environments. Rooted in the study of developmental psychopathology, the diathesis-stress model is a commonly applied paradigm when evaluating the effects of stressful or negative environmental exposures on the development of psychological and behavioral problems (Monroe & Simons, 1991). For example, the diathesis-

stress model stipulates that the degree of vulnerability for developing a particular psychological problem varies across individuals when they experience the same environmental adversity (Broerman, 2020). Individuals who do not possess what are regarded as vulnerability factors, such as a difficult temperament in infancy or a specific risk gene, are considered to be more resilient as they are less likely to experience negative developmental consequences (e.g., externalizing problems, depression) otherwise associated with exposure to the adversity in question.

Given the long-standing focus in developmental and psychiatric research on the interaction of contextual adversity and personal vulnerability characteristics, it is noteworthy that it took much longer for questions to be raised about variation in susceptibility to the beneficial effects of positive or supportive contextual conditions (e.g., supportive parenting, safe neighborhood) on children's development. It was really not until the emergence of differential susceptibility theory that these foci became of central interest. Fundamental to this perspective is the claim that more developmentally plastic individuals are more susceptible to effects of both negative and positive environmental experiences, whereas individuals with lesser degrees of developmental plasticity would be less affected by both negative and positive conditions (Belsky & Pluess, 2009). Therefore, highly plastic individuals would be at greater risk in negative contexts but also have the most to gain from positive and enriching experiences, making them more susceptible to environmental influences "*for better and for worse*".

Not long after differential susceptibility theory was advanced, the vantage sensitivity perspective emerged (Pluess, 2017; Pluess & Belsky, 2013). The vantage sensitivity model stipulates that there are individuals who are especially susceptible to positive, *but not negative* developmental experiences and environm3ental exposures, essentially being the mirror image of

the diathesis-stress model of person-X-environment interaction with its sole focus on contextual adversity and personal vulnerability. The vantage sensitivity model is especially relevant to the evaluation of intervention efficacy as it may help explain why some individuals are more responsive than others to treatment (Pluess, 2017), though it can be misunderstood. Consideration of evidence from intervention studies often fails to recognize a central feature of the vantage sensitivity model: it is not just whether some individual trait is associated with increased likelihood of benefiting from the intervention, but whether there is also a lack of evidence in other research that the same individual trait is not associated with increased susceptibility to adversity. In other words, if there is evidence in other work that a trait is associated with increased vulnerability to negative contextual experiences, then the fact that the same attribute is found in intervention work to be associated with disproportionate benefit is not evidence of vantage sensitivity, but differential susceptibility.

Given that almost any degree of variation in susceptibility to environmental influences can be explained by one of the three frameworks discussed—diathesis-stress, differential susceptibility, and vantage sensitivity—it has been argued that there is risk of the set of models being unfalsifiable (Bakermans-Kranenburg & van IJzendoorn, 2015). Whether susceptibility to the environment operates in a diathesis-stress, vantage sensitivity, or differential susceptibility manner may well depend on the individual susceptibility trait, environmental exposure, and developmental outcome in question. Thus, research testing these models requires the proper methodology to distinguish between diathesis-stress, vantage sensitivity, and differential susceptibility patterns and strong theoretical and empirical support as to why varied susceptibility to negative, positive, or both types of environmental experiences should be expected.

Empirical Evidence of Differential Susceptibility

Many studies have explored whether certain genotypic, endophenotypic, and phenotypic traits operate as plasticity factors and influence children's developmental responses to their environment (Belsky & Pluess, 2009).

Genotype

Gene X Environment (GXE) research has revealed that individuals possessing the 7-repeat DRD4 allele are not only more susceptible to the negative effects of adverse environments but also more susceptible to the positive effects of supportive or enriching environments than individuals who do not carry the allele (Bakermans-Kranenburg & van Ijzendoorn, 2011; Berry et al., 2013; DiLalla et al., 2015). There is also work showing the same in the case of the 5-HTTLPR polymorphism (Brett et al., 2015), as well as of polygenic scores composed of multiple candidate genes (Belsky & Beaver, 2011; Belsky & van IJzendoorn, 2017).

Endophenotype

Complementary to differential susceptibility theory is Boyce and Ellis' (2005) biological sensitivity to context theory (BSC). It stipulates individuals vary in their sensitivity to their environments due to differences in their physiological reactivity. Research incorporating BSC finds that individuals' physiological response patterns influence their susceptibility to the environment in a *for-better*-and-*for-worse* manner. For example, Obradović et al. (2010) reported that young children were differentially susceptible to the effects of family adversity on externalizing behavior, prosocial behavior, and school engagement based on their degree of autonomic and adrenocortical reactivity. Obradović and others (2016) observed similar differential susceptibility patterns when evaluating the relationships between young children's cortisol reactivity, family income levels, and executive functioning (EF) skills. Children with

greater cortisol responses had greater EF skills when their family income was high and poorer EF skills when their family income was low. Children's family income was unrelated to their EF skills when they had lower cortisol responses.

Phenotype

One phenotypic trait extensively studied in the context of differential susceptibility is early temperament. There is ample evidence to suggest that infants and young children with more difficult, fearful, or reactive temperaments— perhaps reflecting more sensitive nervous systems— are more susceptible to their environments, again for better and for worse (Belsky & Pluess, 2009). For example, Stright et al. (2008) examined the relationships between infant temperament, parenting quality during infancy and early childhood, and first-grade academic and social development. Greater parenting quality predicted better first-grade adjustment whereas lower parenting quality predicted poorer adjustment, and these associations were stronger for children who displayed more difficult temperaments as infants.

Personality characteristics in adolescence and adulthood may also be phenotypic traits marking differential susceptibility, although they are not as well-studied as early temperament. Mertens and others (2022) found that levels of neuroticism moderated the effects of a school-based intervention on adolescents' psychosocial functioning such that adolescents scoring higher on neuroticism benefitted the most from the intervention. This study did not directly evaluate the *for-worse* aspect of differential susceptibility as it did not examine interactions between adolescent personality and negative environmental inputs. The fact that other research suggests that neuroticism, as well as other personality traits, may also increase individuals' vulnerability to stress (Enns et al., 2005) underscores the likelihood of more general plasticity.

Plasticity versus Vulnerability

Importantly, then, research must consider both positive (*for-better*) and negative (*for-worse*) exposures/experiences to ascertain whether a trait influences developmental responses to the environment in a differentially susceptible manner. While research has provided evidence to support differential susceptibility theory, revealing that individual traits do act as plasticity factors rather than solely as vulnerability factors a la diathesis stress thinking, there are also studies that provide support for the diathesis-stress model rather than differential susceptibility (Kochanska et al., 2011; Loginova et al., 2021). When a personal characteristic functions as a vulnerability factor but not a more general plasticity factor— across multiple studies— the evidence is much stronger in favor of vulnerability rather than general plasticity.

Domain Generality and Specificity

Although research evaluating differential susceptibility to environmental influences provides evidence of individuals possessing varying levels of general developmental plasticity, a new line of inquiry addresses an issue long-raised but only lately investigated: is developmental plasticity domain-general or domain-specific? If developmental plasticity operates in a domain-general (i.e., trait-like) manner, the degree of environmental susceptibility an individual displays could be expected remain the same across diverse developmental experiences and developmental phenotypes. For example, if children's plasticity is domain-general, those who are more or less responsive to a therapeutic intervention targeting socioemotional well-being could also be similarly responsive to an academic intervention targeting math literacy.

In contrast, domain-specific developmental plasticity implies that an individual's degree of environmental susceptibility could vary by the specific environmental influence or developmental outcome evaluated. For example, children with domain-specific plasticity might be highly susceptible to the effects of friends and family on self-esteem and less so to the effects

of social media, or vice versa. Additionally, children with domain-specific plasticity might be highly responsive to interventions targeting socioemotional outcomes but not interventions targeting academic outcomes, or, again, vice versa. Such results would seem to be more in line with current understanding of neuroscience, in view of the expectation that different brain processes are sensitive to different exposures and/or play a role in the development of different phenotypes (Ellis et al., 2022).

Despite this, it is noteworthy that the same susceptibility factor can be influential across different exposures and/or developmental outcomes. For example, carrying the DRD4 7-repeat allele has been associated with children's greater susceptibility to the effects of a parenting intervention on children's daily cortisol production (Bakermans-Kranenburg et al., 2008a) and externalizing behaviors (Bakermans-Kranenburg et al., 2008b); the effects of childcare quality on children's externalizing behaviors and social skills (Belsky & Pluess, 2013b); and the effects of a computer-delivered program targeting children's early literacy skills (Kegel et al. 2011).

But even given such evidence, also noteworthy is recent work that yields evidence of domain-specific plasticity. Several such studies have utilized an influence statistic approach (i.e., DFBETAS; Belsley et al., 1980) to examine whether the same individuals are more or less susceptible to different environmental experiences and exposures. Taking an influence statistics approach, researchers can identify specific individuals within a sample who increase or decrease the estimate of an association between the predictors and outcomes of interest. This is done by applying a "leave-one-out" procedure— that is, repeatedly re-running a regression model and excusing a single case each re-run. This ultimately reveals whether the exclusion of one case results in the estimated association increasing or decreasing. If the exclusion of a specific case increases the overall association, then that case is determined to be a *negative influencer*,

whereas a case that decreases the overall association when excluded is a *positive influencer*. In the context of children's differential susceptibility, a case (child) found to be a positive influencer— thus *increasing* the overall association when *included* in the prediction equation— is considered to be more susceptible to the effect being examined.

Using influence statistics, Belsky and others (2022) found that children who were differentially susceptible to the effects of childcare quality on preacademic skills were not necessarily the same children who were differentially susceptible to the effects of childcare quantity on behavior problems. Further analysis revealed that children's specific susceptibility to childcare (i.e., quantity, quality, or both) was determined by their polygenic-plasticity score for three genes. In a second study, Zhang and colleagues (2022) used influence statistics to determine whether the same mothers and adolescents were similarly susceptible to the effects of early-life harshness and unpredictability. In contrast to Belsky et al.'s (2022) childcare findings, Zhang and others observed trends more consistent with a domain-general view of susceptibility; that is, mothers with greater susceptibility to the effects of early-life harshness on their psychological well-being and parenting were also more susceptible than other mothers to the effects of early-life unpredictability. Notably, the very same pattern emerged in the case of effects of early-life harshness and unpredictability on adolescents' later sexual behavior. Just as notable was that a modest proportion of both mothers and adolescents (16% ~ 18%) displayed greater susceptibility to early-life harshness, but lower susceptibility to early-life unpredictability— or the reverse. This indicates that for some individuals, susceptibility was domain specific whereas for the large majority it was domain general.

Sayler and others (2022), in a third study in the same series, applied an influence-statistic approach when comparing adolescents' susceptibility to parent and peer effects on adolescents'

psychosocial adjustment, finding that those who were more or less susceptible to parenting were similarly susceptible to peer influences. Somewhat similar to Zhang et al. (2022), Sayler and associates identified a larger, but still modest proportion of adolescents (~33%) who were highly susceptible to one effect but not the other, again reflecting domain-specificity amongst some individuals. In subsequent work, Sayler et al. (2025) focused on children's susceptibility to the effects of early-life threat and deprivation on problem behavior and cognitive deficits, respectively, and found that while about 25% of children in their sample were similarly susceptible or unsusceptible to these effects, about 20% of the sample showed high susceptibility to one effect and not the second. Related research relying on different statistical approaches also found varying degrees of domain-general and -specific susceptibility amongst individuals (Markovitch et al., 2023). Taken together, the findings summarized suggest domain-general/specific developmental plasticity might be best conceptualized as on a bipolar continuum, with some individuals proving similarly susceptible to diverse exposures and others more variable. This certainly raises questions about categorical language to describe individuals' developmental plasticity (e.g., orchid-dandelion, hawk-dove).

Whether there is a continuum of domain-generality/specificity when it comes to environmental susceptibility has implications for intervention development and implementation. Those whose susceptibility is domain general would be consistently susceptible or unsusceptible to diverse exposures and/or developmental phenotypes. In contrast, more domain-specific individuals would be more or less susceptible to one or even a few exposures with respect to one or even a few outcomes.

The Current Study

Differential susceptibility theory is based on the view that individuals are similar in their susceptibility to both positive and negative environmental experiences and exposures. Recent research regarding the domain general or specific nature of environmental susceptibility suggests that some individuals may be more or less susceptible to experiences within one domain (e.g., parents), but then differently susceptible in another domain (e.g., peers). What has yet to be addressed empirically is whether individuals who display more or less susceptibility to negative exposures always display more or less susceptibility to positive exposures within the *same* domain. That is the focus of the research reported herein.

The current inquiry focuses specifically on the environmental domain of parenting and two well-recognized types of parenting— supportive-positive (e.g., sensitivity, positive regard) and harsh-negative (e.g., detachment, hostility)— in an effort to extend recent work testing domain specificity. It is well appreciated that whereas supportive parenting is predictive of positive developmental phenotypes, like prosocial behavior (Cucinella et al., 2022; Ndengeyingoma et al., 2022; Pettit et al., 1997), unsupportive or harsh parenting forecast negative developmental phenotypes, like aggression (Berthelon et al., 2020; Chang et al., 2003; Cucinella et al., 2022; Yang et al., 2023). While research has explored children's differential susceptibility to parenting, these studies most often relied on bipolar parenting composite scores (e.g., high vs. low quality of parenting) and thus have not been positioned to address the issue explored in this report (Hentges et al., 2023; Pluess & Belsky, 2010; Sayler et al., 2022; Stoltz et al., 2017; Zhang et al., 2021). Boele and others (2024) is one recent exception, having investigated whether different responsivity patterns to positive parenting (i.e., parental support) and negative parenting (i.e., parental psychological control) were evident among their sample of Dutch adolescents. Analyzing intensive longitudinal data collected over a two-month period,

Boele et al. found that while some adolescents appeared susceptible to both positive and negative parenting, there were also adolescents who appeared more susceptible to one type of parenting over the other.

In light of these observations, the current report draws on data from the NICHD study of Early Child Care and Youth Development to investigate whether children who are more and less susceptible to the effects of positive parenting are those similarly— or differently— affected by negative parenting. Based on the domain-specific research already cited (e.g., Sayler et al., 2022; Sayler et al., 2025; Zhang et al., 2022), this is not expected to be entirely the case. Preregistered hypotheses stipulate that (H1) greater exposure to positive parenting will predict better socioemotional functioning; (H2) that greater exposure to negative parenting will predict poorer socioemotional functioning; and (H3) that while some children will be similarly susceptible/unsusceptible to both positive parenting and negative parenting, others will be highly susceptible to one type of parenting and highly unsusceptible to the other.

The fourth hypothesis (H4) is based on previous research utilizing an influence-statistic method, DFBETAS, to examine degrees of susceptibility. It stipulates that empirical support for H3 will vary depending on whether DFBETAS indices of susceptibility to both positive and negative parenting are or are not included in the same regression model predicting future child socioemotional functioning. Thus, the specific prediction is that degree of susceptibility to effects of positive and negative parenting will be reduced when DFBETAS susceptibility scores are based on prediction equations in which both parenting predictors are included— due to variance they share in predicting children's development (i.e., multicollinearity).

Method

Participants

Data come from the NICHD Study of Early Child Care and Youth Development (NICHD Early Childcare Research Network [ECCRN], 2005) which was launched in the early 1990s to examine the influence of early childcare (and other) experiences on development from birth through 15 years of age. In 1991, a total of 8,986 women giving birth were screened for eligibility at 10 different hospital locations in the United States. From that group, 1,364 families (boys = 52.4%; White = 81.5%) became study participants after completing a home interview when infant were one month old. Regarding missing data, 731 children were missing at least one variable used to construct the predictor and outcome composite scores used in this study. The total analytic sample size remained 1,364 by means of multiple imputation.

Design

Measurements of parenting were obtained when children were 6, 15, 24, 36, and 54 months of age. While parenting was measured in children's home environments at all five timepoints, parenting observations also took place in a lab setting at the 24- and 36-month timepoints. Teachers reported on child socioemotional outcomes when children were in kindergarten, first, second, and third grade.

Measures

Positive Parenting

Parenting variables were selected from the large data set based on having good face validity for a positive parenting construct (see Table 1). At 6, 15, 24, and 36 months, in-home observation items were rated on a 4-point scale with 1 indicating "not characteristic" and 4 indicating "highly characteristic". At 54 months, items were rated on a 7-point scale with 1 indicating "very low" and 7 indicating "very high". The Home Observation for Measurement of the Environment (HOME) Inventory was also used to collect information on positive parenting

exposures at 6, 15, 36, and 54 months. The items from the HOME inventory were rated dichotomously, with 0 indicating "not observed" and 1 indicating "observed". These items were combined into one variable with 0 indicating "no behaviors observed", 1 indicating "one behavior observed", indicating "two behaviors observed", thus making all positive parenting items measured on continuous scales with higher values reflecting more observed positive parenting. At 24 and 36 months, in-lab observation items were rated on a 5-point scale with 1 indicating "not characteristic" and 5 indicating "very characteristic". All positive parenting items were standardized and summed, with the resulting composite standardized again to yield a z-score representing positive parenting ($\alpha = .96$).

Negative Parenting

Negative parenting was measured through the same multiple methods, with the same original scoring, but in this case selected based on having good face validity for a negative parenting construct (see Table 2). Items from the HOME Inventory pertaining to negative parenting were originally written so 1 reflects observation of the *lack* of the negative parenting behavior in question (i.e., Mother does not shout at child = 1, Mother does shout at child = 0). Thus, these items were reverse scored so 1 reflects observation of negative parenting behavior (i.e., Mother does shout at child = 1, Mother does not shout at child = 0), ensuring higher values for negative parenting items reflect more observed negative parenting. To address skewed distributions, continuous negative parenting variables were rescaled into a binary format with 0 indicating "not observed" and 1 indicating "observed". The negative parenting items were summed, with the resulting composite standardized to yield a z-score representing negative parenting ($\alpha = .98$).

Children's Socioemotional Development

Social Skills. During kindergarten, first, second, and third grade, children's social skills were measured through teacher-reports using the Social Skills Questionnaire from the Social Skills Rating System (SSRS; Gresham & Elliott, 1990). Teachers responded to 30 items documenting the perceived frequency (0 = "never", 1 = "sometimes", and 2= "very often") of target behaviors pertaining to children's cooperation, assertion, and self-control. All 30 item responses were summed to obtain total social skills scores at each age, with higher values reflecting greater skills.

Child Behavior. Children's internalizing and externalizing behavior measured through teacher-reports during kindergarten, first, second, and third grade. Teachers completed the Child Behavior Checklist (Achenbach, 1991), which consists of 100 problem behaviors divided into two subscales— internalizing (e.g., fear, anxiety, sadness) and externalizing (e.g., argues a lot, disobedient, hits) behavior. At each age, the items were summed to obtain total problem behavior scores. These scores were rescaled so that higher values represented fewer behavior problems.

Socioemotional Functioning Grade. Teachers responded to seven items on children's socioemotional functioning using mock report cards in first, second, and third grade. The items were taken from the Teacher Checklist of Peer Relations (Coie & Dodge, 1988) and were rated on a 5-point scale (1 = "very poor" to 5 = "very good"). Sample items include "Understands others' feelings", "Refrains from over-impulsive responding", and "Is aware of the effects of his/her behavior on others". Total scores were derived by calculating the mean of the seven items with higher scores indicating better socioemotional functioning.

Standardized scores for each socioemotional measure were calculated and then averaged together, with the resulting composite standardized again to yield a z-score representing children's socioemotional functioning ($\alpha = .97$).

Analysis Plan

Data analysis involved multiple steps including multiple imputation of missing data, composite score construction for both predictors and outcomes, positive and negative parenting prediction analysis (regression), calculation of individual differences in susceptibility to positive and negative parenting (influence statistics: DFBETAS), and interrelation of susceptibility to positive and negative parenting (correlation, cross-tabulation). All components of data analysis were completed in R and were preregistered (Olwert et al., 2023, OSF).

Addressing Missing Data

Data was assumed to be missing at random (MAR). Multivariate Imputation by Chained Equations (MICE; van Buuren & Groothuis-Oudshoorn, 2011) was applied to address missing data through multiple imputation on all variables. Thus, all analyses were conducted with 20 imputed data sets, with findings reported based on results of all 20 data sets.

Analyses

Preliminary analysis involved generating intercorrelations of the parenting and socioemotional composite scores. The purpose was to ensure that associations were in the expected direction (e.g., more negative parenting predicting poor socioemotional functioning). Addressing the first two hypotheses, primary analyses included two simple regression analyses to predict socioemotional outcomes: one analysis with the positive-parenting composite as the predictor (H1) and one with the negative-parenting composite as the predictor (H2). To address the third hypothesis, individual differences in susceptibility to effects of positive parenting and effects of negative parenting on socioemotional functioning were assessed using an influence-statistic approach, DFBETAS (Belsley et al., 1980). DFBETAS reflects the degree and direction of change of the regression coefficient (i.e., the effects of parenting exposure) after removing

each of the cases, one at a time. Each of the two whole-sample regression analyses were re-ran 1,364 times while employing the leave-one-out procedure.

Thus, two sets of DFBETAS were derived, one with only positive parenting as the predictor and representing each individual's susceptibility to positive parenting, the other with only negative parenting as the predictor and representing each individual's susceptibility to negative parenting. The resultant DFBETAS for the positive and negative parenting were correlated to assess the association between individual susceptibility to each type of parenting. In addition to documenting the correlation of the two susceptibility-to-parenting scores, for descriptive purposes tercile splits of the two DFBETAS' distributions were cross-tabulated. This enabled determination of the percentages of children for whom susceptibility to parenting is more and less similar across the two parenting predictors (H3).

Finally, to address the fourth hypothesis, both parenting predictors were included in a third regression analysis. This approach controlled for negative parenting when estimating effects of positive parenting and vice versa, before estimating susceptibility to each type of parenting (deriving two new sets of DFBETAS) and evaluating consistency in susceptibility to the two types of parenting (H4). For reasons made clear below, the results of this "third" regression analysis are reported *before* those labeled above as "first" and "second", thus deviating from the preregistration plan. In interest of full disclosure, this presentational decision was made *after* all the preregistered analyses were conducted for reasons that should become apparent (i.e., more conservative).

Results

Preliminary Analyses

Results of the preliminary intercorrelations of composite scores of parenting and socioemotional functioning are displayed in Table 3. More positive parenting was significantly related to less negative parenting (r = -.72, p < .001). Each type of parenting was significantly related to socioemotional functioning in the expected direction: positive parenting predicted better socioemotional functioning (r = .39, p < .001) and negative parenting was associated with poorer socioemotional functioning (r = -.42, p < .001).

Primary Analyses

Two separate regression models (i.e., a positive parenting model and negative parenting model) evaluated whether positive (H1) and/or negative parenting (H2) predicted socioemotional functioning in the manner expected. Results for these models are shown in Table 4, entirely consistent with the results of the preliminary analyses (positive-parenting beta = .39, p < .001; negative-parenting beta = -.42, p < .001).

Susceptibility to Effects of Positive and Negative Parenting: Correlational Analysis

Recall that the analytic plan included a total of three regression models: the two aforementioned positive-parenting-only and negative-parenting-only models and an additional model that included both positive and negative parenting as predictors (i.e., the "combined-parenting" model). These regression models were the basis for calculating susceptibility scores for each child (i.e., DFBETAS) and thus used to evaluate the third and fourth hypotheses.

Because the intercorrelation of the predictors of interest (see Table 3) turned out much higher than previous studies utilizing a similar analytic strategy (Sayler et al., 2022; Sayler et al., 2025; Zhang et al., 2022), the results based on the combined-parenting model are reported first, as they reflect more conservative results focused on the unique effects of positive and negative parenting, not ones that are shared.

For the combined-parenting model, the two sets of derived DFBETAS scores were positively and significantly correlated ($r = .70$, $p < .001$), indicating that children most and least susceptible to the *unique* beneficial effects of positive parenting were also most and least susceptible to the *unique* adverse effects of negative parenting. However, when the degree of susceptibility to positive and negative parenting were derived from separate positive and negative parenting models, the correlation between the two sets of susceptibility scores was negative and significant ($r = -0.67$, $p < .001$), indicating that children most and least susceptible to the beneficial effects of positive parenting were, respectively, least and most susceptible to adverse effects of negative parenting.

Susceptibility to Effects of Positive and Negative Parenting: Tercile Split Cross-Tabulation

Differences in individual susceptibility to positive vs. negative parenting were further explored by dividing the positive and negative parenting DFBETAS' distributions into terciles reflecting low, moderate, and high susceptibility. These terciles were cross tabulated with the results displayed in Tables 5 and 6.

With susceptibility scores based on the combined-parenting model, the cross-tabulation revealed that two thirds of the children were placed in the same tercile for both susceptibility distributions, as documented by the downward-diagonal cells in Table 5. Additionally, approximately 4% of children were considered highly susceptible to positive parenting, but low in susceptibility to negative parenting, with the same being true of children displaying the reverse susceptibility profile. Somewhat less than a quarter of the children were highly susceptible to effects of both types of parenting and only a bit more than a fifth displayed low susceptibility to both.

When the same cross-tabulation was carried out for susceptibility scores based on separate positive and negative regression analyses— and thus not the *unique* susceptibility effects of each type of parenting— the degree of overlap in susceptibility to positive and negative parenting was generally smaller. Shown in Table 6, for example, approximately a quarter of children were placed in the same tercile for both susceptibility distributions when susceptibility scores were based on separate models. A fifth of children were considered to have high susceptibility to positive parenting and low susceptibility to negative parenting, whereas a quarter displayed the reverse. Just under 4% of children were highly susceptible to effects of both types of parenting and close to the same was true of children displaying low susceptibility to both types of parenting.

Discussion

The purpose of this study was to extend research on differential susceptibility by evaluating the degree to which children's susceptibility to positive parenting effects on socioemotional functioning proved similar to or different from their susceptibility to negative parenting effects. The current study utilized an influence-statistic method, DFBETAS, following the same approach used in prior work addressing the same question but with respect to the effects of early environmental harshness and unpredictability (Zhang et al., 2022), parents and peers (Sayler et al., 2022), and early-life threat and deprivation (Sayler et al., 2025). Among other things, this involved both estimating (a) total effects of each parenting dimension without controlling for the other (H1, H2) and (b) of each parenting dimension focusing on unique effects (H4, i.e., with the other dimension statistically controlled). Although all analyses adhered to the original plan outlined in the study's preregistration, the sequence of presentation of results was modified, first reporting the results based on the combined-parenting model addressing the (more

conservative) unique effects of each parenting dimension and then reporting on the results of the separate parenting models. This reversed the strategy of presentation in prior publications (Sayler et al., 2022; Sayler et al., 2025).

Hypotheses one and two were supported, in that greater positive parenting predicted better socioemotional functioning and greater negative parenting predicted poorer socioemotional functioning. These relationships were unsurprising given the extensive empirical literature documenting the effects of parenting on children's socioemotional development (Berthelon et al., 2020; Chang et al., 2003; Cucinella et al., 2022; Ndengeyingoma et al., 2022; Pettit et al., 1997; Yang et al., 2023), but critical to establish prior to deriving susceptibility scores and testing hypotheses three and four.

Regarding the third and fourth hypotheses, the results from the combined-parenting and separate parenting models support strikingly different interpretations with respect to the current study's core question of interest. When susceptibility scores were derived from the combined-parenting model, children who were more or less susceptible to the unique effects of positive parenting were also generally similar in their susceptibility to the unique effects of negative parenting (r = .70). The reverse was true when the effect of each dimension was examined without consideration of the effect of the other in the separate parenting models (r = -.67). Thus, there was partial support for hypothesis four in that children's susceptibility scores did vary based on whether they were derived from the separate parenting or combined-parenting models; in fact, they completely contradicted one another, which in retrospect was not surprising given issues of multicollinearity. Notable, then, was the documented— and increased— similarity in degree of susceptibility to effects of positive and negative parenting when the derived

susceptibility scores reflected unique effects of positive and negative parenting based on the combined-parenting mode.

This dramatic contrast was not the case in prior work applying the same analytic strategy to questions of domain-general and -specific susceptibility. But as was mentioned earlier, the dimensions of interest in previous studies were not as highly correlated as the present study's two dimensions of parenting (r = -.72). Critically, the current report breathes more meaning into the results of the combined-parenting model, as those of the other approach would seem to be an artifact of the non-independence of the two parenting dimensions measured and analyzed.

There was much greater similarity in susceptibility to the unique effects of positive and negative parenting (r = .70) in this investigation than was the case when, for example, Sayler and colleagues (2022) focused on unique parent and peer effects (r = .40), also using data from the NICHD Study of Child Care and Youth Development. Further, in the present inquiry, the cross-tabulation of the terciled susceptibility scores revealed that some two thirds of the 1,364 children consistently scored high, moderate, and low, respectively, across the two parenting dimensions (see Table 5), whereas approximately one third of children showed similar susceptibility to parent and peer effects (Sayler et al., 2022). In some respects, this might not be that surprising, even if it was not anticipated. In this research, the source of the environmental exposures being measured were the same people— the participating children's parents, or mothers to be more precise— whereas the two sources were different— parents and peers— in Sayler et al.

Similar to prior work examining domain generality vs. specificity, results of the current work indicate that although a substantial portion of children (~67%) were *generally* more or less susceptible to effects of both positive and negative parenting, there were also some— but much fewer— children who appeared *specifically* more susceptible to one dimension and not the other.

Recall that approximately 4% of children displayed low susceptibility to positive parenting and high susceptibility to negative parenting, thus showing a pattern more consistent with the diathesis-stress framework, whereas another 4% or so displayed low susceptibility to negative parenting and high susceptibility to positive parenting, a pattern more in line with vantage sensitivity. These results complement the findings of Boele and colleagues (2024) who found that around 5% of their adolescent sample appeared primarily sensitive to negative parenting while 3% appeared primarily sensitive to positive parenting. It seems noteworthy that the two inquiries focused on different age groups (i.e., children vs adolescents), utilized different measures of positive and negative parenting, and applied different statistical methodologies, but yielded similar results in regard to the specificity of individuals' susceptibility to positive and negative parenting effects.

The current report joins prior work in cautioning developmental scientists against conceptualizing environmental susceptibility or developmental plasticity as trait-like or in domain-general terms. Even with some children appearing generally more or less susceptible to parenting, there was still a portion of children who appeared more susceptible to one type of parenting compared to the other. This has potential implications for preventions and interventions pertaining to parenting. If children are exposed to harsh or unsupportive parenting but possess high susceptibility to both negative and positive parenting effects, then those children may benefit from improvements in parenting that result from intervention. However, if some children are more susceptible to negative and not positive parenting, that could hinder the effectiveness of parenting interventions even if they do lead to increases in positive parenting. If some children only demonstrate an inherent vulnerability to negative parenting exposures, this necessitates greater efforts in prevention rather than later intervention. Future research is needed

to identify what is responsible for greater susceptibility to negative but not positive parenting—and vice versa.

Strengths and Limitations

The current study has several strengths and limitations. Drawing on data from the NICHD Study of Early Child Care and Youth Development, the present inquiry examined the effects of parenting measured as multiple timepoints (6, 15, 24, 36, and 54 months) and in multiple contexts (home and lab settings). This longitudinal and multi-contextual design increases the likelihood of capturing the variation in parenting children may experience over time compared to measuring parenting at a single timepoint or over a shorter period of time, thus making it a more reliable estimate. However, the information on children's parenting exposures is still limited by the parenting items used, as these do not reflect all aspects of parenting. An additional strength of this study's design is that children's socioemotional outcomes were measured at multiple timepoints and reported by teachers rather than parents.

Turning to limitations, the sample available for investigation may not reflect the population that was sampled. Importantly, rates of negative parenting were much lower compared to positive parenting in the NICHD Study. This raises the issue of generalizability; how might results differ in a sample in which children had experienced far more negative parenting? Another limitation is the failure to include observed parenting by fathers, which should be rectified in future work with research that has far more data on fathering than the current data set. Finally, there is need to recognize that like many multivariate statistics, DFBETAS is not error free, so all estimates reported from these derived statistics are likely imperfect.

References

Achenbach, T M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.

Bakermans-Kranenburg, M. J., & van Ijzendoorn, M. H. (2011). Differential susceptibility to rearing environment depending on dopamine-related genes: New evidence and a meta-analysis. *Development and Psychopathology, 23*(1), 39–52. https://doi.org/10.1017/S0954579410000635

Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2015). The hidden efficacy of interventions: Gene×Environment experiments from a differential susceptibility perspective. *Annual Review of Psychology, 66*(1), 381–409. https://doi.org/10.1146/annurev-psych-010814-015407

Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Mesman, J., Alink, L. R., & Juffer, F. (2008a). Effects of an attachment-based intervention on daily cortisol moderated by dopamine receptor D4: a randomized control trial on 1- to 3-year-olds screened for externalizing behavior. *Development and Psychopathology, 20*, 805–820. https://doi.org/10.1017/s0954579408000382

Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Pijlman, F. T., Mesman, J., & Juffer, F. (2008b). Experimental evidence for differential susceptibility: Dopamine D4 receptor polymorphism (DRD4 VNTR) moderates intervention effects on toddlers' externalizing behavior in a randomized controlled trial. *Developmental Psychopathology, 44*, 293–300. https://doi.org/10.1037/0012-1649.44.1.293

Belsky, J. (1997). Variation in susceptibility to environmental influence: An evolutionary argument. *Psychological Inquiry, 8*(3), 182–186. https://doi.org/10.1207/s15327965pli0803_3

Belsky, J., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2007). For better and for worse: Differential susceptibility to environmental influences. *Current Directions in Psychological Science: A Journal of the American Psychological Society, 16*(6), 300–304. https://doi.org/10.1111/j.1467-8721.2007.00525.x

Belsky, J., & Beaver, K. M. (2011). Cumulative-genetic plasticity, parenting and adolescent self-regulation. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *52*(5), 619–626. https://doi.org/10.1111/j.1469-7610.2010.02327.x

Belsky, J., & Pluess, M. (2009). Beyond diathesis stress: Differential susceptibility to environmental influences. *Psychological Bulletin, 135*(6), 885–908. https://doi.org/10.1037/a0017376

Belsky, J., & Pluess, M.. (2013a). Beyond risk, resilience, and dysregulation: Phenotypic plasticity and human development. *Development and Psychopathology*, *25*(4pt2), 1243–1261. https://doi.org/10.1017/s095457941300059x

Belsky, J., & Pluess, M.. (2013b). Genetic moderation of early child-care effects on social functioning across childhood: A developmental analysis. *Child Development*, *84*(4), 1209–1225. https://doi.org/10.1111/cdev.12058

Belsky, J., & van IJzendoorn, M. H. (2017). Genetic differential susceptibility to the effects of parenting. *Current Opinion in Psychology*, *15*, 125–130. https://doi.org/10.1016/j.copsyc.2017.02.021

Belsky, J., Zhang, X., Sayler, K. (2022). Differential susceptibility 2.0: Are the same children affected by different experiences and exposures? *Development and Psychopathology 34*, 1025–1033. https://doi.org/10.1017/s0954579420002205

Belsley, D., Kuh, E., & Welsch, R. (1980). *Regression diagnostics: Identifying influential data*

and sources of collinearity. New York, NY: Wiley.

Berry, D., Deater-Deckard, K., McCartney, K., Wang, Z., & Petrill, S. A. (2013). Gene-environment interaction between dopamine receptor D4 7-repeat polymorphism and early maternal sensitivity predicts inattention trajectories across middle childhood. *Development and Psychopathology, 25*(2), 291–306. https://doi.org/10.1017/S095457941200106X

Berthelon, M., Contreras, D., Kruger, D., & Palma, M. I. (2020). Harsh parenting during early childhood and child development. *Economics and Human Biology*, *36*, 100831. https://doi.org/10.1016/j.ehb.2019.100831

Boele, S., Bülow, A., de Haan, A., Denissen, J. J. A., & Keijsers, L. (2024). Better, for worse, or both? Testing environmental sensitivity models with parenting at the level of individual families. *Development and Psychopathology*, *36*(2), 674–690. https://doi.org/10.1017/S0954579422001493

Boyce, W. T., & Ellis, B. J. (2005). Biological sensitivity to context: An evolutionary-developmental theory of the origins and functions of stress reactivity. *Development and Psychopathology, 17*(2), 271–301. https://doi.org/10.1017/s0954579405050145

Brett, Z. H., Humphreys, K. L., Smyke, A. T., Gleason, M. M., Nelson, C. A., Zeanah, C. H., Fox, N. A., & Drury, S. S. (2015). Serotonin transporter linked polymorphic region (5-HTTLPR) genotype moderates the longitudinal impact of early caregiving on externalizing behavior. *Development and Psychopathology, 27*(1), 7–18. https://doi.org/10.1017/S0954579414001266

Broerman, R. (2020). Diathesis-stress model. In Zeigler-Hill, V. & Shackelford, T.K. (Eds.),

Encyclopedia of Personality and Individual Differences, 1, 1107-1109. https://doi.org/10.1007/978-3-319-24612-3

Chang, L., Schwartz, D., Dodge, K. A., & McBride-Chang, C. (2003). Harsh parenting in relation to child emotion regulation and aggression. *Journal of Family Psychology*, *17*(4), 598–606. https://doi.org/10.1037/0893-3200.17.4.598

Coie, J. D., & Dodge, K. A. (1988). Multiple sources of data on social behavior and social status in the school: A cross-age comparison. *Child Development, 59*, 815–829.

Cucinella, N., Canale, R., Cavarretta, M. V., Ingoglia, S., Iannello, N. M., & Inguglia, C. (2022). Maternal parenting and preschoolers' psychosocial adjustment: A longitudinal study. *International Journal of Environmental Research and Public Health*, *19*(21), 13750. https://doi.org/10.3390/ijerph192113750

DiLalla, L. F., Bersted, K., & John, S. G. (2015). Peer victimization and DRD4 genotype influence problem behaviors in young children. *Journal of Youth and Adolescence, 44*(8), 1478–1493. https://doi.org/10.1007/s10964-015-0282-4

Ellis, B. J., Sheridan, M. A., Belsky, J., & McLaughlin, K. A. (2022). Why and how does early adversity influence development? Toward an integrated model of dimensions of environmental experience. *Development and Psychopathology*, *34*(2), 447–471. https://doi.org/10.1017/S0954579421001838

Enns, M. W., Cox, B. J., & Clara, I. P.. (2005). Perfectionism and neuroticism: A longitudinal study of specific vulnerability and diathesis-stress models. *Cognitive Therapy and Research*, *29*(4), 463–478. https://doi.org/10.1007/s10608-005-2843-04

Gresham, F. M., & Elliott, S. N. (1990). *Social Skills Rating System manual.* Circle Pines, MN: American Guidance Service.

Hentges, R. F., Davies, P. T., & Sturge-Apple, M. L. (2023). Domain specificity of differential susceptibility: Testing an evolutionary theory of temperament in early childhood. *Development and Psychopathology, 35*(3), 1515–1528. https://doi.org/10.1017/S0954579422000256

Kegel, C. A. T., Bus, A. G., & van IJzendoorn, M. H. (2011). Differential susceptibility in early literacy instruction through computer games: The role of the dopamine D4 receptor gene (DRD4). *Mind, Brain, and Education, 5*(2), 71–78. https://doi.org/10.1111/j.1751-228X.2011.01112.x

Kochanska, G., Kim, S., Barry, R. A., & Philibert, R. A.. (2011). Children's genotypes interact with maternal responsive care in predicting children's competence: Diathesis–stress or differential susceptibility*? Development and Psychopathology, 23*(2), 605–616. https://doi.org/10.1017/s0954579411000071

Loginova, S. V., & Slobodskaya, H. R. (2021). Interactions between child personality and parenting in relation to child well-being: Support for diathesis-stress and differential susceptibility patterns. *Frontiers in Psychology, 12*, 558224. https://doi.org/10.3389/fpsyg.2021.558224

Obradović, J., Bush, N. R., Stamperdahl, J., Adler, N. E., & Boyce, W. T. (2010). Biological sensitivity to context: the interactive effects of stress reactivity and family adversity on socioemotional behavior and school readiness. *Child Development, 81*(1), 270–289. https://doi.org/10.1111/j.1467-8624.2009.01394.x

Obradović, J., Portilla, X. A., & Ballard, P. J.. (2016). Biological sensitivity to family income: Differential effects on early executive functioning. *Child Development, 87*(2), 374–384. https://doi.org/10.1111/cdev.12475

Pettit, G. S., Bates, J. E., & Dodge, K. A. (1997). Supportive parenting, ecological context, and children's adjustment: A seven-year longitudinal study. *Child Development*, *68*(5), 908–923. https://doi.org/10.1111/j.1467-8624.1997.tb01970.x

Pluess M. (2017). Vantage sensitivity: Environmental sensitivity to positive experiences as a function of genetic differences. *Journal of Personality, 85*(1), 38–50. https://doi.org/10.1111/jopy.12218

Pluess, M., & Belsky, J. (2010). Differential susceptibility to parenting and quality childcare. *Developmental Psychology, 46*(2), 379–390. https://doi.org/10.1037/a0015203

Pluess, M., & Belsky, J. (2013). Vantage sensitivity: individual differences in response to positive experiences. *Psychological Bulletin, 139*(4), 901–916. https://doi.org/10.1037/a0030196

Markovitch, N., Hart, Y., & Knafo-Noam, A. (2023). Environmental susceptibility for all: A data-driven approach suggests individual differences in domain-general and domain-specific patterns of environmental susceptibility. *Development and Psychopathology*, 1–17. https://doi.org/10.1017/S0954579423000779

Mertens, E. C. A., Deković, M., Van Londen, M., & Reitz, E. (2022). Personality as a moderator of intervention effects: Examining differential susceptibility. *Personality and Individual Differences, 186*(Part A), Article 111323. https://doi.org/10.1016/j.paid.2021.111323

Monroe, S. M., & Simons, A. D. (1991). Diathesis-stress theories in the context of life stress research: Implications for the depressive disorders. *Psychological Bulletin, 110*(3), 406–

Ndengeyingoma, A., Jacob, M. H., Beaulieu-Kratchanov, V., & Séguin, M.. (2022). Parenting

competencies supporting the development of social and emotional skills of children: A scoping review. *Trends in Psychology*, *32*(2), 425–448. https://doi.org/10.1007/s43076-022-00194-3

NICHD Early Child Care Research Network. (2005). Pathways to Reading: The Role of Oral Language in the Transition to Reading. *Developmental Psychology, 41*(2), 428–442.

Olwert, M. R., Zhang, X., & Belsky, J. (2023, July 27). Positive & Negative Parenting: Are the Same Children Susceptible to the Effects of Each? Retrieved from https://osf.io/zabh6/

Sayler, K., McLaughlin, K. A., & Belsky, J. (2025). Early-life threat and deprivation: Are children similarly affected by exposure to each? *Child Development*, 96, 606–618. https://doi.org/10.1111/cdev.14188

Sayler, K., Zhang, X., Steinberg, L., & Belsky, J. (2022). Parenting, peers and psychosocial adjustment: Are the same-or different-children affected by each? *Journal of Youth and Adolescence*, *51*(3), 443–457. https://doi.org/10.1007/s10964-022-01574-9

Stoltz, S., Beijers, R., Smeekens, S., & Deković, M. (2017) Diathesis stress or differential susceptibility? Testing longitudinal associations between parenting, temperament, and children's problem behavior. *Social Development, 26*, 783–796. https://doi.org/10.1111/sode.12237

Stright, A. D., Gallagher, K. C., & Kelley, K. (2008). Infant temperament moderates relations between maternal parenting in early childhood and children's adjustment in first grade. *Child Development, 79*(1), 186–200. https://doi.org/10.1111/j.1467-8624.2007.01119.x

van Buuren, S., & Groothuis-Oudshoorn, K. (2011). mice: Multivariate Imputation by Chained Equations in R. *Journal of Statistical Software, 45*(3), 1–67. https://doi.org/10.18637/jss.v045.i03.

Yang, P., Schlomer, G. L., & Lippold, M. A. (2023). Mothering versus fathering? Positive parenting versus negative parenting? Their relative importance in predicting adolescent aggressive behavior: A longitudinal comparison. *Developmental Psychology*, *59*(1), 69–83. https://doi.org/10.1037/dev0001442

Zhang, X., Schlomer, G. L., Ellis, B. J., & Belsky, J. (2022). Environmental harshness and unpredictability: Do they affect the same parents and children? *Development and Psychopathology*, *34*(2), 667–673. https://doi.org/10.1017/S095457942100095X

Zhang, X., Widaman, K., & Belsky, J. (2021). Beyond orchids and dandelions: Susceptibility to environmental influences is not bimodal. *Development and Psychopathology, 35*(1), 191–203. https://doi.org/10.1017/S0954579421000821

Table 1. *Positive Parenting Variables*

Location/Method	**Description**	**Age (months)**
Home/Observation	Mother displays sensitivity to child's non-distress	6, 15, 24
	Mother displays positive regard toward child	6, 15, 24,
	Mother serves as a supportive presence for child	36, 54
	Mother displays respect for child's autonomy	36, 54
HOME Inventory	Mother praises child	6, 15, 36, 54
	Mother is physically affectionate toward child	6, 15, 36, 54
Lab/Observation	Maternal sensitivity/guidance during activity with child	24, 36
	Mother displays positive regard toward child	24, 36

Table 2. *Negative Parenting Variables*

Location/Method	**Description**	**Age (months)**
Home/Observation	Mother displays detachment from child	6, 15, 24
	Mother displays flat affect toward child	6, 15, 24
	Mother displays intrusiveness with child	6, 15, 24
	Mother displays negative regard toward child	6, 15, 24, 36
	Mother displays hostility toward child	36, 54
HOME Inventory	*Mother does not shout at child	6, 15, 36, 54
	*Mother does not slap or spank child	6, 15, 36, 54
	*Mother does not scold or criticize child	6, 15, 36, 54
	*Mother does not display hostility toward child	6, 15
	*Mother does not physically restrain child	36, 54
	*Mother does not utilize physical punishment	36, 54
Lab/Observation	Maternal overcontrol during activity with child	24, 36
	Maternal undercontrol during activity with child	24, 36
	Mother displays negative regard toward child	24, 36

Note. An * denotes items that were reverse scored so greater values would reflect greater levels of observed negative parenting.

Table 3. *Intercorrelation of Constructs*

Composite	Positive Parenting	Negative Parenting	Socioemotional Functioning
Positive Parenting	-		
Negative Parenting	-.72***	-	
Socioemotional Functioning	.39***	-.42***	-

Note. ***$p < .001$.

Table 4. *Regression Results of (A) Positive Parenting Effects, (B) Negative Parenting Effects, and (C) Combined-Parenting Effects on Socioemotional Functioning*

A. Positive Parenting Effect Model

Predictor	*B*	*SE B*	*t*	*df*	*p*
Positive Parenting	.39	.03	12.09	106.01	<.001

B. Negative Parenting Effect Model

Predictor	*B*	*SE B*	*t*	*df*	*p*
Negative Parenting	-.42	.03	-12.32	74.21	<.001

C. Combined-Parenting Effects Model

Predictor	*B*	*SE B*	*t*	*df*	*p*
Positive Parenting	.18	.04	4.43	219.15	<.001
Negative Parenting	-.29	.05	-6.44	102.61	<.001

Table 5. *Tercile Splits of Susceptibility Scores (Combined-Parenting Model)*

	Susceptibility to Negative Parenting			
Susceptibility to Positive Parenting	Low	Moderate	High	Total
Low	309 (22.9%)	88 (6.5%)	58 (4.3%)	455
Moderate	89 (6.6%)	281 (20.8%)	84 (6.2%)	454
High	57 (4.2%)	85 (6.3%)	313 (23.2%)	455
Total	455	454	455	1346

Table 6. *Tercile Splits of Susceptibility Scores (Separate Parenting Models)*

	Susceptibility to Negative Parenting			
Susceptibility to Positive Parenting	Low	Moderate	High	Total
Low	51 (3.8%)	128 (9.5%)	276 (20.5%)	455
Moderate	71 (5.3%)	255 (18.9%)	128 (9.5%)	454
High	333 (24.7%)	71 (5.3%)	51 (3.8%)	455
Total	455	454	455	1346

Appendix A

Positive Parenting Variables, % Missing

Sensitivity 6mo	*Sensitivity (lab) 24mo*
6.744868	14.442815
Positive Regard 6mo	*Positive Regard (lab) 24mo*
6.744868	14.442815
Affection 6mo	*Supportive Presence 36mo*
6.231672	14.736070
Sensitivity 15mo	*Respect for Autonomy 36mo*
9.090909	14.736070
Positive Regard 15mo	*Sensitivity 36mo*
9.090909	15.249267
Affection 15mo	*Positive Regard 36mo*
9.530792	15.249267
Sensitivity 24mo	*Affection 36mo*
14.076246	13.563050
Positive Regard 24mo	*Affection 54mo*
14.076246	23.38709

Negative Parenting Variables, % Missing

Intrusiveness 6mo	*Negative Regard 6mo*
6.744868	6.744868
Detachment 6mo	*Flat Affect 6mo*
6.744868	6.744868

Shouting 6mo

6.231672

Hostility 6mo

6.231672

Slap or Spank 6mo

6.231672

Criticism 6mo

6.231672

Intrusiveness 15mo

9.090909

Detachment 15mo

9.090909

Negative Regard 15mo

9.090909

Flat Affect 15mo

9.090909

Shouting 15mo

9.530792

Hostility 15mo

9.530792

Slap or Spank 15mo

9.530792

Criticism 15mo

9.530792

Overcontrol (lab) 24mo

14.442815

Undercontrol (lab) 24mo

14.442815

Negative Regard (lab) 24mo

14.442815

Intrusiveness 24mo

14.076246

Detachment 24mo

14.076246

Negative Regard 24mo

14.076246

Flat Affect 24mo

14.076246

Overcontrol (lab) 36mo

15.249267

Undercontrol (lab) 36mo

15.249267

Negative Regard (lab) 36mo

15.249267

Hostility 36mo

14.882698

Criticism 36mo

13.563050

Physical Restraint 36mo

13.563050

Slap or Spank 36mo

13.563050

Physical Punishment 36mo

13.563050

Criticism 54mo

23.387097

Physical Restraint 54mo

23.387097

Slap or Spank 54mo

23.387097

Physical Punishment 54mo

23.533724

Socioemotional Variables, % Missing

Internalizing Score Kindergarten

26.392962

Externalizing Score Kindergarten

26.392962

Social Skills Score Kindergarten

27.199413

Internalizing Score 1st Grade

26.099707

Externalizing Score 1st Grade

26.099707

Social Skills Score 1st Grade

26.612903

Socioemotional Functioning 1st Grade

26.246334

Internalizing Score 2nd Grade

33.064516

Externalizing Score 2nd Grade

32.331378

Social Skills Score 2nd Grade

33.064516

Socioemotional Functioning 2nd Grade

32.551320

Internalizing Score 3rd Grade

27.859238

Externalizing Score 3rd Grade

27.859238

Social Skills Score 3rd Grade

28.372434

Socioemotional Functioning 3rd Grade

27.052786