HHS Public Access

Author manuscript

J Abnorm Child Psychol. Author manuscript; available in PMC 2015 May 01.

Published in final edited form as:

J Abnorm Child Psychol. 2015 May ; 43(4): 693–703. doi:10.1007/s10802-014-9936-z.

Negative Relational Schemas Predict the Trajectory of Coercive Dynamics During Early Childhood

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Abstract

Coercive family processes are germane to the development of problem behaviors in early childhood, yet the cognitive and affective underpinnings are not well understood. We hypothesized that one antecedent of early coercive interactions is the caregiver's implicit affective attitudes toward the child, which in this article are termed *relational schemas*. Relational schemas have previously been linked to coercion and problem behaviors, but there has yet to be an examination of the association between relational schemas and trajectories of coercion during early childhood. We examined 731 indigent caregiver-child dyads (49% female children) from a randomized intervention trial of the Family Check-Up. Predominantly biological mothers participated. A speech sample was used to assess relational schemas at age 2. Coercive interactions were assessed observationally each year between ages 2 and 4. Caregiver and teacher reports of children's oppositional and aggressive behaviors were collected at age 7.5 and 8.5. Path analysis revealed that negative relational schemas were associated with less steep declines in coercion during this period, which in turn were predictive of ratings of oppositional and aggressive behaviors at age 7.5/8.5 after controlling for baseline levels, positive relational schemas, child gender, ethnicity, and cumulative risk. Intervention condition assignment did not moderate this relationship, suggesting the results represent a naturally occurring process. Given the link between persistent early coercion and later deleterious outcomes, relational schemas that maintain and amplify coercive dynamics represent a potential target for early intervention programs designed to improve parent–child relationships.

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Keywords

affective attitudes; coercion; dynamic systems; relational schemas

Coercive, harsh, and conflictual parenting practices are a salient risk factor for the development of conduct problems, aggression, and oppositional behavior in early childhood (Dishion & Patterson, 2006; Shaw, Gilliom, Ingoldsby, & Nagin, 2003). Early problem behaviors are one of the strongest predictors of more serious delinquent behaviors later in life (Shaw, Owens, Giovannelli, & Winslow, 2001). Although the development of problem behaviors is undoubtedly multidetermined, coercive family dynamics are particularly germane to this early childhood difficulty. Coercion theory (Patterson, 1982) posits a process of mutual negative reinforcement during which caregivers inadvertently strengthen children's difficult behaviors through escape conditioning, which in turn elicits caregiver negativity, and so on, until the interaction is discontinued when one of the participants "wins." The coercive cycle often begins with a process that has been referred to as caregiver "nattering" – when parents are indiscriminately negative with children (Patterson, Reid, & Dishion, 1992). Eventually, through daily and repeated events, the child may learn to escalate and "win" these relatively minor conflicts and over time, become socialized to respond negatively to caregiver intrusions (Snyder, Edwards, McGraw, Kilgore, & Holton, 1994). When coercive interactions dominate within the family, child problem behaviors emerge and potentially stabilize through childhood and carry over into peer relationships (Dishion, 2013; Granic & Patterson, 2006). High rates of coercive interaction patterns during early childhood have been linked to aggressive and antisocial behavior problems at school entry (Patterson et al., 1992; Smith et al., in press).

Although the link between coercive dynamics and problem behaviors is well established, empirical examinations of the etiology of coercion, particularly starting in toddlerhood, are less developed. It was Patterson's (2002) contention that a functional link between caregiver–child exchanges of noncompliance and reactive aggression defines the emergence of coercion in early childhood. That is, a child's noncompliance to a caregiver's request is met with an angry response that results in a coercive interchange. We tested the directionality of this reciprocal relationship among our study sample (Smith et al., in press) and found that coercive exchanges from age 2 to 5 amplify childrens' noncompliance and oppositional and aggressive behaviors assessed in subseqeunt years more strongly than child behaviors amplify coercion. Caregivers' ineffective reactions and negative emotionality in response to willful noncompliance and aggression, behaviors that are common in early childhood (Tremblay et al., 2004), can inadvertently initiate and perpetuate coercive interaction patterns. From this perspective, caregivers' ineffective responses to a difficult-to-parent child's behavior are the primary way in which coercive interactions arise (Patterson, 2002; Scaramella & Leve, 2004). In his theory of early coercive processes, Patterson (2002) speculated that caregivers' depressive symptoms, antisocial proclivities, prenatal experiences, hyporesponsiveness, and life stress contribute to coercion.

Despite his seminal theoretical contributions and pioneering early empirical work on coercive family processes, Patterson seldom discussed the role of caregivers' cognitions

concerning the child and the parent-child relationship and the relation to coercive exchanges, except that he argued for the primacy of parenting behaviors, which mediate the influence of cognitions and associated emotions on child outcomes (Patterson, 1997). Others have contributed considerable empirical support for this contention (Bugental, Johnston, New, & Silvester, 1998; MacKinnon-Lewis, Lamb, Arbuckle, Baradaran, & Volling, 1992; Nix et al., 1999) and also for the notion that cognitions moderate the relation between parenting behaviors and child outcomes (Snyder, Cramer, Afrank, & Patterson, 2005).

In the context of intervention, Patterson's meditational model has garnered minimal support and even findings indicating the opposite relationship. Bugental and colleagues (2002) found that a family-centered, home-visiting intervention for mothers with infants at risk for maltreatment effectively reduced harsh parenting behaviors and corporal punishment. However, despite positive changes in caregiver cognitions after intervention, this change did not act as a mediator of the effects. A similar pattern has emerged from attachment-based parenting programs: Effects on parenting behaviors are generally stronger than the effects on cognitive processes (e.g., Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2007). Collectively, the finding that interventions exert an effect on behavior before, and potentially even without, changing cognitions are important for the development of effective intervention programs. These findings seem to indicate that although cognitions influence parenting behaviors, intervention effects on cognitions occur as a result of changing parenting behaviors. It could be argued that the interventions are simply more adept at changing behavior than cognitions. On the other hand, in a quasi-experimental study of a subsample of the families from this trial, Smith, Dishion, Moore, Shaw, and Wilson (2013) found that families who received one additional component, a video feedback intervention, of an evidence-based parent training program, the Family Check-Up (FCU; Dishion & Stormshak, 2007) were observed to engage in less coercive exchanges 3 years later (between ages 2 and 5). The reduction in caregivers' NRSs from age 2 to age 3 mediated the relationship between video feedback and coercive interactions. Additional research in the context of child development and family-based intervention is needed given these somewhat conflicting findings. It is clear that cognitions play an important role in parenting behaviors; the precise nature requires investigation.

Patterson (1982) also noted that two of the major caregiver contributors to coercion dynamics were selective tracking of negative behaviors and overreaction to them when they occur. In was generally assumed, however, that the cognitions that were most relevant to social interaction dynamics were implicit and unconscious (Patterson et al., 1992). It was hypothesized that the parents' implicit and unconscious beliefs about the intent and cause of the child's behavior formed the underpinnings of selective tracking and negative affective response that trigger a coercive interaction. In accord with Patterson's contention, we postulate that caregivers' implicit beliefs and affective attitudes toward the child influence observable parent-child coercive interactions. Despite a number of empirical studies supporting the link between implicit beliefs and coercion, few longitudinal evaluations exist that consist of repeated assessment of family coercion dynamics.

A caregiver's set of implicit beliefs and affective attitude can be referred to as a *relational schema* (RS; Bullock & Dishion, 2007). Despite their early origins in attachment theory (i.e., internal working models; Bowlby, 1980), RSs can be positioned in relational frame theory as an overlearned and unconscious semantic schema that guides actions and reactions to interpersonal events (Hayes, Barnes-Holmes, & Roche, 2001). The implicit, stable cognitive processes that define RSs, termed *schematic cognitions*, include internal working models and attributional styles and have been described in the broader literature about parental cognitions about the child and family (for a review see Bugental & Johnston, 2000). Significant overlap can be seen between schematic cognitions and conceptualizations of RSs. Caregivers' RSs are shaped by actual interactions with the child(ren) and may also result from interpersonal histories not involving the child, such as family of origin experiences (i.e., the caregiver's own childhood experiences of harsh parenting and rejection), that influence how caregivers read parent-child interactions. For the caregiver, RSs guide their evaluation and their reaction to a child's behaviors, as well as their attribution regarding the intent of the child's behaviors (Fonagy & Target, 1997). A caregiver's interpretation that a child is purposely provoking or frustrating attempts to parent exemplifies what can be called a *negative relational schema* (NRS). To the contrary, interpretations of the child as characteristically well intentioned, compliant, and responsive to the caregiver are called a *positive relational schema* (PRS).

RSs operate largely outside of the caregiver's awareness because they are part of an unconscious, automatic cognitive process. For this reason, research has converged on the use of the five-minute speech sample (FMSS) to assess RSs. FMSSs were originally designed to assess the construct of expressed emotion, which is typically used to understand family dynamics associated with expression of psychopathology (Asarnow, Lewis, Doane, Goldstein, & Rodnick, 1982; Doane, Goldstein, Miklowitz, & Falloon, 1986; McFarlane, 2006). The FMSS begins with instructions to talk out loud about one's relationship with a family member. Bullock and Dishion (2004, 2007) developed a rating system that identified underlying RSs called the Family Affective Attitude Ratings Scale (FAARS).

In three recent studies, the FAARS was used to code FMSSs for PRS and NRS. Bullock and Dishion (2007) examined 40 caregivers of adolescents (ages 9–17 years) grouped according to parent-reported high and low levels of antisocial behaviors. The NRS and PRS scales differentiated the levels of antisocial behavior (in the predictable direction) and uniquely predicted levels of antisocial behavior 2 years later, controlling for observed coercion. Second, in an Australian sample of 95 clinic-referred conduct-disordered boys (ages 4–12 years) and their caregivers (94 mothers and 62 fathers), the FAARS scales differentiated children with conduct problems from children referred for other emotional and behavioral concerns (Pasalich, Dadds, Hawes, & Brennan, 2011). Third, Waller and colleagues (2012) used the FAARS to code behaviors among the same sample as that examined in our study. Results from the FAARS at age 2 were associated with caregiver reports of daily conflict with their toddler and observed measures of harsh and positive parenting assessed concurrently and 1 year later. Using a simple slope regression analysis, RSs assessed at age 2 and 3 were significantly associated with growth in caregiver report of child conduct

problems at age 4. RSs also contributed to the prediction of observed problem behaviors beyond that of parenting measures.

RSs appear to be relatively impervious to environmental contingencies, such as shifts in the caregiver–child relationship and changes in the child's behaviors (Catania, Matthews, & Shimoff, 1982); consequently, they are difficult to alter because of their inherent automaticity. Even though RSs are difficult to change, it has been argued that incorporating cognitive, relational, and affective dimensions into conceptualizations of parenting, as well as behavioral components, may help improve outcomes of family-centered interventions (Hill, 2002). RSs are known mediators between family context and coercive interaction patterns (MacKinnon-Lewis et al., 1992; Nix et al., 1999), which renders them clear targets for intervention. In a series of studies, Strassberg found that mothers of children with behavior problems were more likely than other mothers to read ambiguous child behaviors as intentionally defiant (Zv. Strassberg, 1997) and that implicit cognitions were highly predictive of this tendency (Zvi Strassberg, 1995). Transtheoretical reframing techniques target these cognitive systems to increase effective parenting practices.

Aims and Hypotheses

We examined the relationship between caregivers' RSs and the trajectory of observed caregiver–child coercive interactions from ages 2 to 4. No studies have examined this relationship by using models of longitudinal growth of coercive interactions assessed observationally with dynamic systems methods, which capture the moment-to-moment shifts in the dyad and are the state-of-the-science method for coercive processes (Dishion & Granic, 2004; Granic & Patterson, 2006). On the basis of previous findings with this sample (Smith et al., 2013; Smith et al., in press), we hypothesized that higher NRS scores would be associated with less steep declines in coercion. This relationship is meaningful only if the trajectory of coercive interactions is related to salient child outcomes. Thus, we hypothesized that the trajectory would be related to observed child noncompliance at age 5, which would in turn predict caregiver and teacher reports of the child's oppositional and aggressive behavior in the home and classroom, respectively. PRSs were included in the model because they may be a protective factor betweeb NRSs and coercion. Similarly, caregiver depression was included in the model because caregivers' negative mood has been found to be associated with more negative attributions and interpretations of child behaviors (e.g., Geller & Johnston, 1995).

Methods

Participants

In this study we examined 731 caregiver–child dyads (49% female children) recruited from the Women, Infants, and Children Nutrition Program (WIC) in three geographically and culturally diverse U.S. regions near Charlottesville, Virginia (188 dyads), Eugene, Oregon (271), and Pittsburgh, Pennsylvania (272). Families with children between ages 2 years 0 months and 2 years 11 months who indicated socioeconomic, family, or child risk factors on screening measures were invited to participate in the study (367 were randomly assigned to the intervention condition and 364 families to a WIC services as usual condition). The

caregivers who participated in the interaction tasks were predominantly biological mothers at each age (age 2, 96%; age 3, 95%; age 4, 94%; age 5, 93%). Caregivers referred to as "alternate caregivers" were mainly biological and stepfathers but also included grandmothers, aunts, and other relatives and non-relatives who regularly cared for the child. The sample reflects cultural diversity, including European American (50.1%), African American (27.9%), and Latino/Hispanic (13.4%) families.

Procedures

Assessment protocol—Caregivers and children who agreed to participate in the study were scheduled for a 2.5-hour home visit prior to being offered the Family Check-Up (FCU). Each year the assessment began by introducing the child to an assortment of age-appropriate toys and having them play for 15 minutes while the caregiver completed questionnaires. For ages 2 and 3, free play was followed by a clean-up task (5 minutes). Beginning at age 3, a delay of gratification task followed (5 minutes). Next was a set of 3-minute-long teaching tasks. Afterward, children participated in an age-appropriate inhibition task (3–9 minutes). Last, dyads participated in a meal preparation and lunch task (20 minutes). Caregivers were also administered a FMSS (described in the Measures section) and questionnaires.

Family Check-Up—The FCU is an ecological approach to family intervention and treatment designed to improve children's adjustment by motivating positive behavior support and other family management practices. The FCU is a brief, three-session intervention that is individually tailored to the needs of the family. Typically, the three meetings include an initial contact session, a home-based multi-informant ecological assessment, and a feedback session (Dishion & Stormshak, 2007). Feedback emphasizes parenting and family strengths, yet draws attention to possible areas of change. Each year of the study, families in the FCU condition were offered feedback, which occurred after the in-home assessment for research purposes. Engagement in the FCU, defined as receipt of feedback, from ages 2 to 4 were as follows: age 2, 76%; age 3, 69%; age 4, 70%. In total, 86% of the families in the FCU condition received at least one feedback by age 4 and 44% of families received feedback in all 3 years. Previous research found that participation in the FCU leads to reductions in problem behaviors during the preschool years (Dishion et al., 2008) and that intervention effects increase significantly as a function of the number of feedback sessions received from ages 2 to 4 (Dishion et al., 2014).

Measures

Caregiver coercive behavior—Videotaped interaction tasks administered each year from ages 2 to 4 (teaching, inhibition, meal) were coded using the Relationship Affect Coding System (RACS; Peterson, Winter, Jabson, & Dishion, 2008). The RACS coding was done using Noldus Observer (Noldus Information Technology, 2012), which enables continuous coding of an interaction as the behaviors are observed. The RACS records three continuous streams of behavior (verbal, physical, affect). Summary scores were created to capture salient dimensions of the parent-child interaction. First, the streams were combined to create six behavior clusters: positive engagement (POS), neutral engagement (NEU), no talk (NTK), directives (DIR), negative engagement (NEG), and ignore (IGN). A state space

grid was used to organize and conceptualize the real-time dynamic exchanges between the caregiver and child, when each person's behavior was coded simultaneously and continuously throughout an observation session (Hollenstein, 2012; Lewis, Lamey, & Douglas, 1999). Dyadic regions were defined to capture clusters of similar behaviors. In this study, we were interested in the caregivers' contribution to coercive interactions through the use of aversive, negative strategies while managing the child's behavior. These behaviors are at the core of coercive caregiver–child interactions and increase the likelihood of escalation. Thus, we specified a salient region of the grid to measure a caregiver's contributions to coercive exchanges, termed *caregiver coercive behaviors*: the caregiver observed to be NEG or DIR and the child observed to be NEU, DIR, NEG, or NTK. Figure 1 illustrates an example of a coded exchange in one caregiver–child dyad that had high levels of caregiver coercive behaviors. The dyad's behaviors are depicted on the grid (caregiver on *y*-axis and child on *x*-axis). The caregiver coercive behaviors region is outlined in black. The gray lines within the grid represent transitions between dyadic states. The circles at the ends of lines represent the length of time that the dyad remained in a particular location on the grid: Larger circles represent longer times before transition. Duration proportion scores were calculated to determine the amount of time each dyad spent in this region. Reliability coefficients, provided by Noldus Observer, were in the "excellent" range (overall kappa = .93; percent agreement > 93 at each year).

Relational schemas—Primary caregivers' RSs about their child were assessed at age 2. FMSSs, during which the caregiver is asked to talk about their child and his or her relationship with the child for 5 minutes, were coded using the FAARS (Bullock & Dishion, 2004). Assessors provided the instructions for the task and then left the caregiver alone in the room to minimize distractions while the caregiver's response was digitally recorded. Trained undergraduate and graduate coders rated the FMSSs on the three scales of the FAARS: (a) Negative Attitudes and (b) Positive Attitudes expressed by the primary caregiver about the child, and (c) Family Cohesion. We used the NRS and PRS scales. Items in the scales were rated on a 9-point Likert scale (1 = *no examples evidenced*, 9 = *two or more concrete, unambiguous examples*). The NRS scale contains five codes, for example, the caregiver is critical of the child's traits/personality and the caregiver assumes/attributes negative intentions of the child. The PRS scale comprises five corresponding codes worded on a positive valance. For additional scoring criteria and administration procedures, see the FAARS manual (Bullock & Dishion, 2004). The scales indicated good overall interrater agreement (82.8%) and internal consistencies: NRS (α = .84), PRS (α = .81).

Oppositional and aggressive behaviors—We created a measure of child oppositional and aggressive (OPP/AGG) behaviors from the Child Behavior Checklist (CBCL) parent version (Achenbach & Rescorla, 2001) and Teacher Report Form (TRF; Achenbach & Rescorla, 2001) to assess behavior problems in the home and classroom. The CBCL is an empirically validated measure of child behavior problems. We administered the CBLC to primary and alternate caregivers and to the primary teacher of study participants at the age 7.5 and age 8.5 assessments. Respondents were asked to rate the applicability of several statements regarding child behaviors by using a 3-point Likert scale in which 0 = *not true*, 1 = *somewhat, sometimes true*, and 2 = *very true, often true*. Eight items that map onto DSM-

IV (American Psychiatric Association, 2000) criteria for oppositional defiant disorder and conduct disorder, including their aggressive hallmarks, were selected, and a composite variable was computed by averaging the values for these items. Internal consistency of the OPP/AGG scale was acceptable: primary caregiver reports (age 7.5, α = .84; age 8.5, α = .83), alternate caregiver reports (7.5: α = .83; 8.5: α = .82), and teacher reports (7.5: α = .90; 8.5: α = .92). Because of the high level of missing data for the alternate caregiver (59% available at age 7.5; 57% available at age 8.5; 70% combined) and teacher reports (43% available at age 7.5; 52% available at age 8.5; 62% combined), either report was used as the outcome when only 1 year was available. A mean of the two scores was used when data were available at both time points. The number of available primary caregiver reports also increased using this method (78% available at age 7.5; 76% available at age 8.5; 83% combined). These three scales comprised the indicators of the OPP/AGG behavior latent construct.

Caregiver depression—Primary caregivers' initial level of depressive symptomatology was assessed at child age 2 with the 20-item Center for Epidemiological Studies on Depression Scale (Radloff, 1977). Ratings are provided on a scale ranging from 0 (*less than a day*) to 3 (*5–7 days*) and are summed. Internal consistency was acceptable (α = .74).

Cumulative risk—An index of cumulative risk was generated from seven indicators reported at entry into the study: (a) single parenthood, (b) parent substance use problem, (c) low maternal education, (d) residence in a dangerous neighborhood, (e) residence in a densely populated neighborhood, (f) income below the national poverty line, and (g) parent with a felony conviction. Families received a score of 1 for each risk indicator if present or 0 if the risk indicator was absent. The index is a total of the seven indicators.

Data Analysis

To address our hypotheses, we constructed a path model in a structural equation modeling framework using an iterative model-building process. First, we fit an unconditional latent growth curve (LGC) to the coercive interactions variable at ages 2, 3, and 4 and evaluated the fit of an unconditional multirater latent construct of child problem behaviors using confirmatory factor analysis (CFA). Next, we added caregivers' NRSs and PRSs and the baseline (age 2) covariates (child gender and ethnic minority status; observed child noncompliance; caregiver depression; cumulative risk) as predictors of the LGC. We then added child noncompliance at age 5 and the child OPP/AGG behaviors latent construct to the model, as shown in Figure 2. Coercion dynamics potentially differ by child gender during early childhood (Gray et al., 2012; Patterson, 2002) and could be culturally bound because parents' socialization strategies are guided by variability in optimal parenting practices that are largely based on a family's cultural values, beliefs, and racial socialization (Dunsmore & Halberstadt, 2009). Thus, child gender and ethnicity (minority status compared with European American) were tested for moderation by using a multiple-group analysis approach comparing fit indices of nested unconstrained and constrained models. To ensure that our results were representative of naturally occurring processes, we also tested for moderation by intervention condition assignment. We also tested for an intervention effect on coercive trajectories by using an intention-to-treat approach. Consistent with the

procedures described by Singer and Willett (2003), covariates unrelated to the parameters of the LGC and not significantly related to the outcome variables were discarded in the final model for parsimony.

Path modeling was conducted in Mplus 7.1 (Muthén & Muthén, 2013) and used maximum likelihood estimation with robust standard errors (MLR) to account for missingness in the data (see Table 1 for valid *N*s). MLR has been shown to provide more valid estimates of standard errors when dependent variables (i.e., caregiver coercive behaviors) are nonnormally distributed (Little & Rubin, 2002). Fit of each model was examined using the chi-square statistic, comparative fit index (CFI; Bentler, 1990), root mean square error of approximation (RMSEA; Steiger, 1990), and standardized root mean square residual (SRMR; Hu & Bentler, 1999). Small chi-squares correspond to better fit to the data. CFI values greater than 0.90 indicate acceptable fit to the data (Bentler, 1992). RMSEA values less than 0.05 indicate good model fit, and values up to 0.08 represent reasonable errors of approximation (Browne & Cudeck, 1993). SRMR values less than .08 are generally considered good fit (Hu & Bentler, 1999).

Results

Table 1 contains the intercorrelations and descriptive statistics of the variables in this study. Of note, coercive interactions were significantly ($p < .001$) and modestly intercorrelated amongst the three measurements ($r = .15–.30$); caregivers' NRSs and PRSs were negatively and significantly correlated ($r = −.12$); correlations between RSs and coercion were small and generally nonsignificant; NRSs, PRSs, and primary caregiver depressive symptoms were correlated with both caregivers' reports of OPP/AGG at age 7.5/8.5 in the expected directions but were not correlated with teacher reports of oppositional behaviors in the classroom. Coercion at ages 3 and 4 was also significantly correlated with teacher reports of OPP/AGG. Noncompliance at age 5 was significantly correlated with both the primary and alternate caregiver reports and teacher report of OPP/AGG and coercion at ages 3 and 4.

Fitting the LCG

We expected a linear decline in the trajectory of caregiver coercive behavior during this period, on the basis of existing literature (Shaw et al., 2001; Smith et al., in press). Modeling an unconditional LGC provided excellent fit to the data, $\chi^2(1) = .013$, CFI = 1.00, RMSEA = .000, SRMR = .001. As predicted, coercive interactions declined significantly over time during this period (slope = −.004). The intercept and slope parameters had significant individual variation (intercept = .004, $p < .001$; slope = .001, $p < .01$).

Child OPP/AGG behaviors construct

CFA of the three-indicator model produced a saturated model, $\chi^2(1) = .000$, CFI = 1.00, RMSEA = .000, SRMR = .000.Standardized factor loadings were .74, .79, and .48 for the primary caregiver, alternate caregiver, and teacher reports, respectively. Factor loadings were significant for each variable, meaning they each contributed significant variance to the latent factor. Teacher report served as the reference variable.

Path model

The NRS and PRS variables and covariates were then added to the model, followed by the outcome variables. The covariates included in the model were allowed to correlate with each other and with PRS and NRS. The final model (Figure 2) had acceptable model fit, $\chi^2(41) = 91.46$, CFI = .908, RMSEA = .041, SRMR = .037. Higher scores on caregivers' NRSs were significantly associated with a less steep decline in observed coercion. Less steep declines in coercion were significantly associated with higher observer ratings of noncompliance at age 5, controlling for baseline levels. Higher ratings of noncompliance at age 5 were significantly related to higher levels of OPP/AGG behaviors reported by caregivers and teachers at age 7.5/8.5. The path coefficients for the final model in Figure 2 are provided in Table 2. Paths of the covariates not shown in the model are not included in the table (comprehensive results are available by request from the first author). Of note, however, was (a) a mean level difference in the OPP/AGG behavior construct by child gender, such that boys had higher scores (β = .20, *SE* = .04, $p < .001$); (b) higher cumulative risk was associated with higher ratings on the OPP/AGG behavior construct (β = .12, *SE* = .05, $p < .01$) and on observed noncompliance at age 5 (β = .08, *SE* = .04, $p < .05$); and (c) higher caregiver depressive symptomatology at age 2 was related to higher ratings of OPP/AGG behavior (β = .21, *SE* = .05, $p < .001$). Last, tests of moderation based on child gender, ethnic/racial group membership, and intervention group assignment did not reveal significant structural invariance. Gender and minority status were removed from the model as a covariate to conduct the multiple group analysis for moderation. The final model accounted for 21% of the variance in the OPP/AGG behaviors construct, with 25% of the variance in teacher report, 54% in the primary caregiver report, and 60% in the alternate caregiver report. All *R*-square estimates were significant ($p < .001$).

Discussion

The etiology of early coercive interaction patterns has been examined observationally largely through the lens of behavioral reinforcement and the reciprocal relationship between ineffective parenting and child behavioral problems (Patterson, 2002; Scaramella & Leve, 2004; Smith et al., in press). Yet, there is empirical support for the role of RSs in the development of coercion dynamics and problem behaviors from toddlerhood through adolescence (Bullock & Dishion, 2007; Pasalich et al., 2011; Smith et al., 2013; Waller et al., 2012), suggesting the relevance of implicit cognitions in coercive caregiver–child interactions. Our findings provide support for Patterson's (1997) view that parent behaviors function as a mediator between the influence of caregiver cognitions and related emotions and child behavioral outcomes. The results of this study revealed that caregivers' NRSs at child age 2 were associated with less steep declines in the trajectory of coercive interactions through age 4, controlling for relevant covariates. NRSs were the only significant predictor of the slope of coercion. Further, the slope of coercive interactions has an indirect relationship with elevated caregiver ratings and teacher ratings of children's oppositional and aggressive behaviors at ages 7.5 and 8.5 by way of observed child noncompliance at age 5. Notably, the presence of PRSs did not outweigh the influence of NRSs. A significant, albeit small, negative correlation between NRSs and PRSs suggests that they tap into distinctive aspects of caregivers' implicit beliefs.

This study occurred in the context of a randomized intervention trial. Thus, discussion of the findings regarding intervention effects and their clinical implications is warranted. The results indicated that there was no significant direct effect of the intervention on the trajectory of caregiver coercive behaviors. Intervention condition assignment also did not moderate the relationships in the model. A lack of intervention effects on the coercion trajectory and no moderation by intervention group increases our confidence that the findings represent a naturally occurring relationship between RSs and coercion dynamics. Two other studies from this dataset have also reported nonsignificant direct effects of the FCU on coercive processes in early childhood (Sitnick et al., in press; Smith et al., in press). Sitnick and colleagues found an effect of the intervention on increases in positive interactions from age 2 to 5, which was associated with declines in observed coercion over time. Smith and colleagues found that the FCU reduced trajectories of parent-reported aggressive and oppositional child behaviors, observer ratings of noncompliance, and teacher reports of behavior problems in school, each of which was related to observed coercion between the caregiver and child, but no direct effect of the intervention on coercion was found. Although their study was limited in sample selection, sample size, and nonrandomization, Smith and colleagues (2013) found that families with children in the clinical range of behavioral problems who received a video feedback intervention during the FCU at age 2 had significant reductions in coercive caregiver behaviors at age 5. This effect was fully mediated by reductions in NRSs 1 year after the intervention (age 3). Coupled with the results of our study, it becomes apparent that caregivers' negative relational schemas about the child are crucial to understanding intrafamilial coercive processes in early childhood and to effectively intervening.

The measurement of coercive interactions deserves discussion. First, we defined a cluster of behaviors on a state space grid to capture aversive parenting behaviors characterized by negativity and the use of directives to manage the child's behavior during a series of interaction tasks. Although the behavior of one member of the dyad cannot be separated from that of the other, we specified a region of the grid with a wider range of behavioral responses from the child to better isolate the contributions of the caregiver, which we hypothesized to be reflective of the influence of the RS. For example, failure to respond to environmental contingencies is a hallmark of coercion dynamics. That is, although the child is ignoring or has a neutral response to a caregiver's request, the caregiver responds with negativity, perhaps influenced by a rigid RS to act on overlearned behavior patterns. A caregiver with a NRS is primed to expect the child to be noncompliant and is more likely to interpret the child's ambiguous behaviors as a bid to undermine attempts at parenting. Our findings indicate that the caregiver's RS has an enduring influence on the child's behavior, which may be somewhat surprising given that ratings of the RS are based on a five-minute speech sample collected at age 2.

Second, different coercion constructs from this dataset exist in the published literature. Smith and colleagues (in press) specified a *dyadic* coercive process in which the caregiver and child are mutually negative. In contrast, in this study and that of Smith and colleagues (2013), the caregiver coercive behaviors region on the state space grid was used. In this conceptualization, negative caregiver responses can occur when the child is behaving in a

variety of ways that include negative as well as ambiguous behaviors. For this reason, we believe this definition of caregiver coercive behaviors is closely aligned with and influenced by the caregivers' RS. The caregiver behaviors captured in this region are akin to aversive caregiving strategies—the primary precipitant of a coercive exchange (Patterson, 1982)—and represent the caregiver's contribution to the initiation and escalation of the coercive cycle. Of note, analysis of our model using the dyadic coercive behaviors variable described in Smith and colleagues' article (in press) in place of the caregiver coercive behavior region revealed a nonsignificant relationship with NRSs. However, the direction of the relationship was the same as that reported here. Our finding that persistent aversive parenting strategies predict children's behaviors at school age is not new but supports our inquiry into this dynamic and the factors that maintain coercive interactions, and this knowledge is vital to developing effective family-based interventions.

This study has a number of strengths, including a longitudinal design beginning in toddlerhood, a sophisticated multimethod and multirater assessment strategy, and an ethnically and geographically diverse sample. However, there are limitations. First, the sample represents a group of low-income families with high rates of caregiver mental health and substance use issues (see Trentacosta et al., 2008), which limits the generalizability of our findings to families with fewer risk factors. Second, our analysis of the influence of caregiver's RSs and coercive interactions is limited to a global perspective, as opposed to a truly moment-to-moment examination of the precise relationship between RSs and the coercive behaviors. Advancements in electroencephalography, for example, and other data acquisition methods (e.g., vagal tone, respiratory sinus arrhythmia), make it possible to conduct this type of research, because the automaticity and implicit nature of cognitive schemas otherwise renders them largely inaccessible to conscious awareness and thus require real-time assessment of representative physiological and neurological processes (see Bargh & Williams, 2006). This study suggests that RSs exert considerable influence on behavior that endures over time and affects behavioral socialization of the child. Third, consistent with prominent developmental models (Cicchetti, 1993; Sameroff, 2010), temperament, genetic factors, and neuropsychological indicators could be included in future research. Similarly, intergenerational factors, such as the caregiver's experience of harsh parenting, rejection, and coercive interactions during childhood are also of interest and should be considered for inclusion. These measures were not available in this dataset. Last, although there was modest stability in RSs between ages 2 and 3 in this sample (Waller et al., 2012), and theory suggests that RSs are relatively unaffected by environmental contingencies, a time-covarying relationship between RSs and coercion could be empirically tested using a cross-lagged panel model or parallel process growth model. These alternatives would require a third measurement time of RSs, to which we do not currently have access but could be tested in future research.

Conclusions

Caregivers with more negative RSs are susceptible to reacting to their children in ways that incite coercive processes perhaps because they unconsciously read their children's behaviors as intentionally frustrating or otherwise negative. This is a potential mechanism that could explain the link between RSs and early emergence of coercion in caregiver–child dyads.

From an intervention standpoint, family-based programs that are successful at reducing coercion lead to long-term improvements in child behaviors and family functioning (Dishion, Kavanagh, Schneiger, Nelson, & Kaufman, 2002; Forgatch & Patterson, 2010). Yet, coercion dynamics are difficult to alter, in part because of the implicit and often automatic nature of the response contingencies that govern coercive interactions. Interventions with components and techniques that explicitly target caregivers' RSs are likely to reduce coercion and improve long-term youth outcomes.

Acknowledgments

This research was supported by grant DA016110from the National Institute on Drug Abuse grant to Thomas Dishion, Daniel Shaw, and Melvin Wilson. Justin D. Smith received support from research training grant MH20012 from the National Institute of Mental Health, awarded to Elizabeth Stormshak, and from a seed grant from the College of Liberal Arts and Sciences at Arizona State University. The authors gratefully thank Cheryl Mikkola for editorial support, the observational coding team at the Child and Family Center, the rest of the Early Steps team in Eugene, Pittsburgh, and Charlottesville, and the families who have participated in the study.

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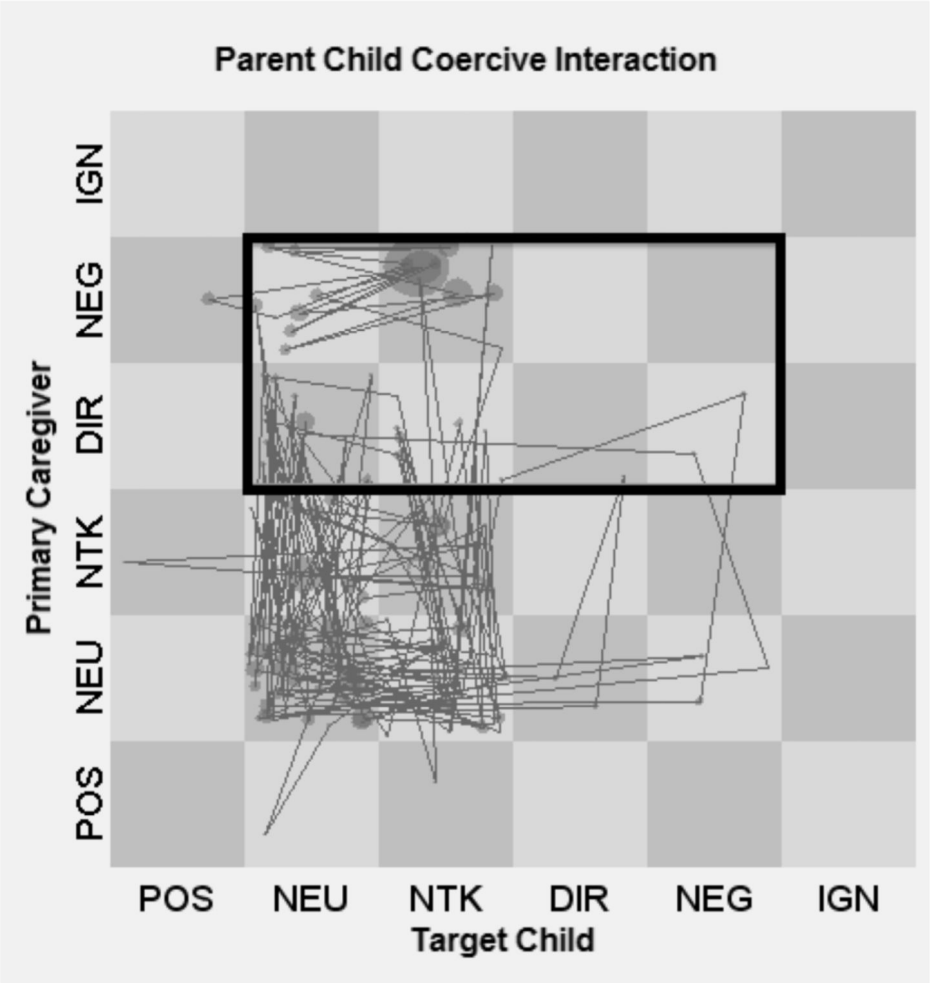

Figure 1. The caregiver coercive interactions region

Note. Caregiver coercive behaviors region outlined in black. POS = Postive engagement. NEU = Neutral engagement. NTK = No talk. DIR = Directive. NEG = Negative engagement. IGN = Ignore. Lines within the grid indicate transitions between regions. The larger the circle, the longer the duration of time spent in the region. The interactions depicted in the figure are from one family in the study and are not intended to be representative of the whole sample or even a common pattern of dyadic behaviors.

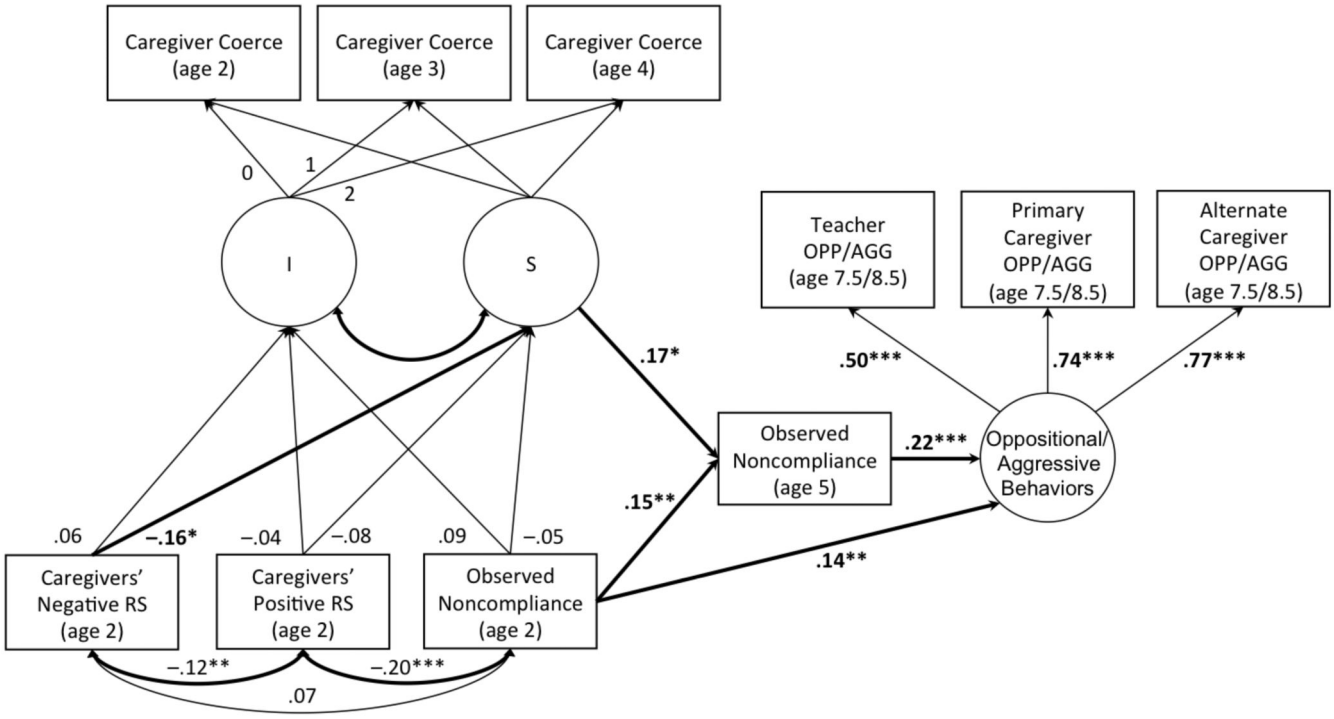

Figure 2. Path model

Note. Bold paths are significant. * = $p < .05$. ** = $p < .01$. *** = $p < .001$. All covariates were assessed at study entry (child age 2). Relationships with the latent growth curve intercept were modeled as correlations, not regressions, as is depicted here.

Table 1

Intercorrelations Between Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Negative relational schema (age 2)	—	−.12**	.05	−.01	−.07	.07	−.06	.14**	.13**	.07	.03	.04	.01	.05
2. Positive relational schema (age 2)		—	.02	−.11**	−.07	−.20**	−.09	−.09*	−.06	−.01	.03	.01	−.05	.03
3. Caregiver coercive behaviors (age 2)			—	.29**	.15**	.03	.01	.03	.04	.06	−.01	.10**	.01	−.01
4. Caregiver coercive behaviors (age 3)				—	.30**	.08*	.09*	.02	−.01	−.13*	−.01	.12**	.09*	−.03
5. Caregiver coercive behaviors (age 4)					—	.03	.16**	.04	.03	.12*	.02	.06	.09*	−.10*
6. Observed noncompliance (age 2)						—	.15**	.15**	.18**	.09	.02	.03	.01	−.11**
7. Observed noncompliance (age 5)							—	19**	19**	17**	−.05	.07	.07	−.11**
8. Primary caregiver OPP/AGG (7.5/8.5)								—	.58**	.35**	.22**	.08*	.03	−.14**
9. Alternate caregiver OPP/AGG (7.5/8.5)									—	.38**	.14**	.18**	.06	−.20**
10. Teacher OPP/AGG (7.5/8.5)										—	.08	.13**	.02	−.13**
11. Primary caregiver depression (age 2)											—	19**	.08*	−.04
12. Cumulative risk (age 2)												—	.20**	−.00
13. Ethnic minority													—	−.03
14. Child gender														—
Mean	2.64	4.08	.217	.200	.168	.242	−.268	.434	.363	.253	16.75	2.10		
Standard Deviation	1.22	1.54	.099	.095	.080	.872	.806	.357	.328	.383	10.66	1.25		
N	647	647	726	633	559	725	567	609	512	453	729	716	731	731

Table 2

Results of Path Analysis

Model path	*B*	*SE (B)*	β	95% CI
Caregiver coercive behaviors slope → NRS	−.30*	.15	−.15	−.590 | −.005
Caregiver coercive behaviors slope → PRS	−.12	.12	−.08	−.349 | .111
Caregiver coercive behaviors slope → noncompliance (age 2)	−.17	.17	−.06	−.515 | .168
Noncompliance (age 5) → caregiver coercive behaviors slope	.06*	.03	.17	.001 | .115
Noncompliance (age 5) → noncompliance (age 2)	14**	.05	.15	.048 | .222
OPP/AGG → noncompliance (age 5)	.05***	.01	.22	.479 | 1.399
OPP/AGG → noncompliance (age 2)	.03**	.01	.14	.198 | .919

Note. Effect is considered significant if the 95% confidence interval does not contain zero.

*$p < .05$. **$p < .01$. ***$p < .001$. Only paths shown in Figure 1 are provided. Notable significant regressions from covariates on endogenous variables are provided in text.

Comprehensive results of the path model are available by request from the first author.