Identifying mother-child interaction styles using a person-centered approach

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Abstract:

Parent–child conflict in the context of a supportive relationship has been discussed as a potentially constructive interaction pattern; the current study is the first to test this using a holistic analytic approach. Interaction styles, defined as mother–child conflict in the context of maternal sensitivity, were identified and described with demographic and stress-related characteristics of families. Longitudinal associations were tested between interaction styles and children's later social competence. Participants included 814 partnered mothers with a first-grade child. Latent profile analysis identified agreeable, dynamic, and disconnected interaction styles. Mothers' intimacy with a partner, depressive symptoms, and authoritarian childrearing beliefs, along with children's later conflict with a best friend and externalizing problems, were associated with group membership. Notably, the dynamic style, characterized by high sensitivity and high conflict, included families who experienced psychological and relational stressors. Findings are discussed with regard to how family stressors shape parent–child interaction patterns.

Keywords: parent–child conflict | maternal sensitivity | latent profile analysis | person-centered

Article:

Introduction

Conflict between parents and children is inevitable at all stages of development. It can arise from mundane disagreements about household tasks to power negotiations of family rules (Grieshaber, 2004). Conflict is typically defined as arguments and disagreements (Hay, 1984), and as parents' and children's resistant and oppositional behaviors toward one another (Huang, Teti, Caughy, Feldstein, & Genevro, 2007). Although parent–child conflict has been associated with children's behavior problems, school difficulties, and peer rejection (Smetana, 1996), positive effects of conflict have also been reported. Constructive parent–child conflict that is expressed appropriately and resolved collaboratively has been linked to children's higher self-

esteem, greater independence, and identity development (Cooper & Cooper, 1992; Dunn, 2004; Grotevant & Cooper, 1985).

It has been hypothesized that one important characteristic that determines whether parent–child conflict will lead to negative or positive outcomes for children is the quality of the parent–child relationship in which the conflict is embedded (Laursen & Hafen, 2010). Investigators have speculated that a moderate amount of parent–child conflict in the context of supportive relationships may serve a socializing function for children's social and emotional development. As Deutsch (1973) describes, conflict can be constructive for family relationships when parents and children are able to collaborate and negotiate to find common solutions. The presence of conflict provides opportunities for children to practice negotiating and regulating their emotions, and for parents and children to directly address disagreements before they negatively affect children's adjustment (Laursen & Hafen, 2010). Parents and children whose relationships have consistently been characterized by sensitive caregiving are more likely to respect one another's perspectives, making the negotiation of agreeable resolutions more likely. Among poor-quality relationships, any amount of parent–child conflict is likely to lead to maladjustment due to the fact that disputes in insensitive environments have been shown to escalate into hostility and disengagement (Hauser, Power, & Noam, 1991; Patterson, 1982).

In the current study, we extend prior research by using a dyadic person-centered approach to identify patterns of mother–child interaction based on a combination of level of conflict and degree of maternal sensitivity. We further explore demographic and stress-related characteristics of families who fit each interaction style, and examine whether these styles are associated with children's later social competence across middle childhood.

Parent–child Interaction Styles

Often, the combination of parenting behaviors as they create a pattern of family interaction is more informative than examining how levels of individual variables are related to one another. This represents the idea of holism, that the totality is greater than the sum of the parts (Magnusson, 1998), or what has been termed the person-centered approach. The person-centered approach distinguishes individuals based on their set of positions on multiple factors rather than distinguishing individuals based on their relation to other individuals on a single dimension (Magnusson, 1998). Using such an approach, individual differences are represented by pattern differences, and only a limited number of functional possibilities exist due to the stability and homogenization that develop within categories (Magnusson, 1998). Thus, a limited number of types are identified based on the interrelated components of an individual or family that are illustrated through patterns of behavior. Perhaps the greatest advantage of using a person-centered approach to understand parenting behavior is the added ecological validity in recognizing that there are qualitative differences in patterns of family interaction. In the current study, the combination of parent–child conflict and parental sensitivity is predicted to create an interaction style where the nature and meaning of conflict cannot be fully understood without also considering sensitivity in parent–child relationships.

Baumrind's (1971) original typology of parenting styles characterized by control and warmth captures a similar idea. She identified parenting styles with qualitative differences in parental

control dependent on the degree of parental warmth (Baumrind, 1989). For example, a positive type of parental control, firm control, was identified only in the context of high warmth whereas a qualitatively different type of control, identified as restrictive or psychologically manipulative, was found to be present when warmth was low. Similarly, mothers have been shown to initiate more conflicts, have lower quality conflict interactions, and respond to children more destructively in mother–child dyadic interactions when they are depressed or when the dyad is characterized by an insecure attachment (Caughy, Huang, & Lima, 2009; Laible, Panfile, & Makariev, 2008). In combination, these findings suggest that examining parent–child conflict without also considering positive aspects of the parent–child relationship may be misleading. Similar to parental control, parent–child conflict may be qualitatively different in terms of function and meaning depending on parental sensitivity. In the current study, patterns of parent–child interaction characterized by both conflict and sensitivity are described in the current study as a typology of parent–child interaction style. Using the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD), parent–child conflict is indexed by mothers' reports of the level of arguments, disagreements, and opposition between herself and her child. We define parent sensitivity during the early school years as mothers' supportive, positive, and non-intrusive behavior during interaction with the child. Previous research on these constructs using the SECCYD dataset at the early school-aged assessments has demonstrated significant associations between both maternal sensitivity and mother–child conflict with mother and teacher reports of children's social competence across middle childhood (Fraley, Roisman, & Haltigan, 2013; Iruka, Burchinal, & Cai, 2010).

We examine mother–child pairs when children were in first grade. Research on conflict has typically focused on either early childhood (e.g., Ostrov & Bishop, 2008) or adolescence (e.g., Smetana, 1996), with little attention paid to the middle childhood period (Dixon, Graber, & Brooks-Gunn, 2008). During these years, however, children are developing advanced cognitive capacities for conflict discussion and negotiation (Kerns, 2008). These developmental changes are likely to create contentions and require adjustments in the ways parents and children interact. The meaning of parent sensitivity is also changing during these early school-aged years in reaction to children's increasing independence, as parents' emotional availability becomes more important than their physical proximity to the child (Kerns, 2008). Many first-grade children begin to spend more time outside of the home than with parents and siblings (Collins, Madsen, & Susman-Stillman, 2002), and begin to switch their focus toward the peer group (Berndt, 2004), thus providing many opportunities to bring social skills learned at home into a new setting.

Although a typology of conflict in the context of sensitivity has not been examined, previous research on conflict patterns can be used to inform our predictions. Smetana (1996) used cluster analysis to characterize conflict frequency and severity. The most common group, the *frequent squabblers*, was characterized by high conflict frequency with low to average severity. The second largest group, the *placid* pairs, was characterized by very little conflict overall with low severity. The third group, the *tumultuous* group, experienced high conflict frequency with high intensity. Most informative for the current study, Smetana's three conflict clusters were differentially related to important parenting dimensions reflecting degrees of sensitivity. Both placid and frequently squabbling families were more likely to use an authoritative parenting style than tumultuous families, suggesting that placid and squabbling parents both tend to be responsive to children despite the varying degrees of conflict. Also, placid parents were rated as

being warmer than tumultuous parents. These findings, together with those of Laursen and Hafen (2010), suggest that multiple interaction styles should be identified based on different degrees of sensitivity and conflict.

Family Characteristics Associated With Interaction Styles

Parent–child interaction is determined, in part, by the characteristics of parents and children and by contextual factors (Belsky, 1984; Meyers, 1999). Family stressors are often identified as characteristics of families that drain emotional resources, and thus decrease the quality of parent–child interactions (e.g., Nelson, O'Brien, Blankson, Calkins, & Keane, 2009; Repetti & Wood, 1997). Therefore, the second goal of the current study was to better understand these family groups by examining demographic and stress-related factors.

Demographic Characteristics

Demographic factors, including family income, child sex, and ethnicity, are relevant to parent–child interactions. Higher family income is typically associated with more positive family relationships due to less financial strain (Hair, Moore, Garrett, Ling, & Cleveland, 2008); however, family income has also been reported to be unrelated to the frequency of parent–child conflict (Bradford, Vaughn, & Barber, 2008). In terms of child sex, mother–daughter conflict tends to be more frequent and intense than mother–son conflict (Allison & Schultz, 2004). And finally, there is evidence that European American parent–child pairs tend to report more frequent conflict than ethnic minority families in the USA (Barber, 1994), although ethnic differences in conflict frequency are not consistently supported (Fuligni, 1998).

Maternal Stress-related Characteristics

Maternal characteristics associated with stress and negative affect are also likely related to mother–child interaction patterns. Intimacy with a partner, depressive symptoms, and authoritarian childrearing beliefs are the stress-related characteristics examined in the current study. To start, a lack of closeness and intimacy in parents' marital relationship is a common source of stress among families. The negativity associated with marital problems often permeates other family relationships. It has been proposed that the parent–child relationship is negatively influenced by marital problems through several mechanisms, including children's emotional insecurity (Davies & Cummings, 1994) and emotional distance from parents (Sobolewski & Amato, 2007), and through impaired parenting with higher marital conflict, leading to more harsh discipline and lower parental involvement in children's lives (Buehler & Gerard, 2002). Additionally, parents' depressive symptoms are likely to lead to more negative family interactions. Parents suffering from depressive symptoms often disengage from family life and have an overall more negative outlook. Symptoms include sadness, irritability, hopelessness, and loss of interest. Past research has found that parents' depressive symptoms are related to more frequent parent–child conflict (Allan, Kashani, & Reid, 1998; Fendrich, Warner, & Weissman, 1990). And finally, parents' beliefs that their child should always be obedient encourage rigid parenting that minimizes children's exploration and initiative (Schaefer & Edgerton, 1985). These restrictive characteristics of parent–child relationships create an atmosphere of inflexibility and intolerance for child independence, in addition to less parental

support and more punishment (Luster, Rhoades, & Haas, 1989). As early school-aged children develop their own sense of self and test limits of their autonomy (Berndt, 2004), parents' authoritarian childrearing beliefs emphasizing child obedience may lead to higher rates of parent–child conflict and more negative interactions due to the rigidity in these parents' practices.

Interaction Styles and Children's Later Behavior

The third goal of the study was to examine the relation between identified interaction styles and children's later social competence during middle childhood. To test the theory that parent–child interaction styles lay a foundation for children's interactions with peers, we investigated conflict and contention within the child–best friend relationship, along with children's externalizing and internalizing behavior problems that are commonly associated with negative parent–child interactions. Parent–child conflict has been shown to be highly related to children's reports of conflict with their best friend (Laursen & Mooney, 2008), suggesting that a style of interpersonal problem-solving and negotiating may be modeled in the family context and carried forward into the school setting. Coercion theory suggests that negative parent–child interactions and child behavior problems increase over time as child compliance becomes increasingly difficult to obtain (Patterson, 1982). Children whose behavior problems persist into middle childhood have demonstrated serious maladaptive functioning (Moffitt & Caspi, 2001), and parenting has been shown to predict these trajectories (Calkins & Keane, 2009; Meunier et al., 2011). It has been suggested that conflict with a sensitive parent may teach children important social and emotional skills (Laursen & Hafen, 2010), in which case we would expect to see greater social competence in children who experience some conflict that is conducted in a sensitive manner. Thus, it is of interest to examine whether mother–child interaction styles at the start of the school-aged years relate to children's later social behavior with peers.

Research Questions and Hypotheses

Research questions and hypotheses for the current study were as follows: (1) How do mother–child conflict and maternal sensitivity combine into interaction styles? It is anticipated that four styles will be found that represent patterns of conflict in the context of sensitivity in the mother–child relationship: *agreeable*, *dynamic*, *abrasive*, and *detached*. Agreeable families will be high on sensitivity and low on conflict; dynamic families will be high on sensitivity and moderate to high on conflict; abrasive families will be low on sensitivity and high on conflict; and detached families will be low on both sensitivity and conflict. (2) How do demographic and maternal stress-related characteristics relate to mother–child interaction style? Based on past work suggesting that mother–daughter relationships are more fused, and thus more conflict-ridden as school-aged children seek autonomy from parents (Collins & Russell, 1991), we predict that mother–daughter pairs will have a higher likelihood of being categorized as dynamic or abrasive than mother–son pairs. Secondly, we anticipate that families in which mothers are high in depressive symptoms and authoritarian childrearing beliefs and low on intimacy with a partner will be more likely categorized as abrasive or detached than other families. Specific predictions were not made for family income or ethnicity due to inconsistent findings in past research. (3) Does mother–child interaction style relate to children's social competence over time? We predict that children from agreeable and dynamic styles will experience less conflict with a best friend, and less internalizing and externalizing behavior problems over time, whereas children from

abrasive and detached styles will experience more conflict with a best friend and more problem behavior.

Method

Sample

Participants included partnered mothers who participated in the NICHD SECCYD, a longitudinal study conducted at 10 sites across the USA beginning in 1991. The initial sample was drawn from all women giving birth during selected 24-hour periods at each site. Mothers were screened for eligibility and willingness to be contacted. Families were excluded if the mother was younger than the age of 18, admitted substance abuse, or did not speak English; the infant had a known disability, was of a multiple birth, or needed to remain in hospital care; or the family planned to move or lived more than an hour from the research site. Of the 8986 mothers who gave birth during the sampling period, 5416 (60 percent) met eligibility requirements and agreed to be contacted. A conditionally random sample was then selected to increase participant diversity based on marital status, educational attainment, and ethnicity, resulting in a final sample of 1364 families that completed home interview when infants were 1 month old. The recruited sample consisted of 52 percent boys, 24 percent children of color, 45 percent first-born children, 11 percent mothers without high school completion, and 14 percent single-parent families.

The current sample consisted of 814 mothers with a partner living in the home when the study child was in first grade. Only mothers who participated in an observed play interaction were included. Compared with the 1364 recruited families, the subsample had higher income at the first assessment, $t(1271) = 5.15$, $p < .01$, mothers were older, $t(1362) = 9.22$, $p < .01$, and had more education, $t(1361) = 9.57$, $p < .01$, and children were more likely to be European American, $\chi^2 (1, N = 1364) = 60.07$, $p < .01$. Among the 814 families in the subsample, the average income-to-needs ratio was 4.32, with 19 percent below 2.0, indicating low income. Of the children, 49 percent were female and 16 percent were ethnic minorities (6.5 percent African-American, 5.3 percent Latino).

Procedure

Participating families reported demographic information during a home visit when the child was approximately 1 month old. Additional assessments took place throughout early childhood. At first grade ($M = 7.12$ years), mothers were interviewed, and children were observed at home; children were also observed at school and in the laboratory. Mothers updated demographic information, completed questionnaires, and were observed in interaction with the study child. At third grade ($M = 9.11$ years), teachers completed measures of children's behavior in the classroom, and children completed measures of their relationships with friends.

Measures

Mother–child Interaction Style (First Grade)

Sensitivity

Mothers' sensitivity with their child was coded during separate 15-minute structured play interactions; interactions were videotaped and later coded by trained observers. Two of the three tasks that parents and children completed were designed to be too difficult for the children to complete on their own, thus requiring direction from parents. The third task was designed to encourage play between parents and children. Sensitivity was calculated as a composite of the parent's supportive presence with the child, respect for the child's autonomy, and parent hostility with the child (reflected), all coded from videotapes by trained coders on a scale from 1 (*very low*) to 7 (*very high*). The sensitivity composite had a possible range of 3–21, with higher scores indicating higher sensitivity. Inter-rater reliability was established on 196 cases and ranged from $r = .75$ to $r = .78$ for the three subscales. Internal reliability (Cronbach's alpha) of the sensitivity measure was .82.

Conflict

Mothers completed the parent-child relationship scale short form, adapted from the student-teacher relationship scale (Pianta, 1994). Seven items rated on a 5-point Likert scale were used to assess parents' feelings and beliefs regarding the amount of conflict in their relationship with the study child (e.g., *My child and I always seem to be struggling with each other*; 1 = *definitely does not apply*, 5 = *definitely applies*). Scores could range from 7 to 35, with higher scores indicating more parent–child conflict. Internal reliability was .84.

Demographic characteristics

Mothers reported on their child's sex and ethnicity at the first study assessment (1 month), and updated reports of their family income at the first-grade assessment were used in this study. Family income-to-needs ratio was calculated using the family income, current year's poverty thresholds, and the number of people in the home.

Maternal Characteristics (First Grade)

Intimacy with partner

The intimacy subscale from the personal assessment of intimacy in relationships questionnaire (Schaefer & Olson, 1981) was completed to assess mothers' intimacy with their spouse or partner living in the home. Six statements describing relationships were presented to mothers [e.g., *My* (*spouse/partner*) *listens to me when I need someone to talk to*]. They were asked to indicate on a 5-point Likert scale the extent to which they agreed or disagreed with the relationship statements (1 = *strongly disagree*, 5 = *strongly agree*). Internal reliability of the measure was .88.

Depressive symptoms

To assess depressive symptoms, mothers completed the Center for Epidemiologic Studies depression scale (Radloff, 1977). After being presented with 20 statements of self-descriptive feelings (e.g., *I felt irritated*), mothers were asked to indicate how often they themselves

experienced similar feelings during the past week on a 4-point scale [0 = *rarely or none of the time (less than once a week)*, 3 = *most or all of the time (5–7 days a week)*]. Four items were reflected prior to summing the scores, and higher scores indicate higher levels of depressive symptomatology. The possible range of scores is 0–60. Internal reliability was .91.

Authoritarian childrearing beliefs

Mothers completed the parental modernity scale of childrearing and educational beliefs (Schaefer & Edgerton, 1985), which measures traditional/authoritarian beliefs that children should follow adult direction (e.g., *Children generally do not do what they should unless someone sees to it*). It includes 22 items scored on a 5-point scale (1 = *strongly agree*; 5 = s*trongly disagree*). The possible range of scores is 22–110, with higher scores indicating a stronger emphasis on obedience-oriented beliefs about raising children. Scores had an internal reliability of .89.

Child Characteristics (Third Grade)

Conflict with best friend

Children completed the friendship quality questionnaire (Parker & Asher, 1993), a 21-item measure designed to assess perceptions of their relationship with their best friend. Of the six subscales, only the conflict and betrayal score was used in the current study. This subscale is an average of four items assessed on a 5-point scale (1 = *not true at all*; 5 = *really true*), with higher responses indicating more conflict behaviors between the best friends. Internal reliability for the subscale was .72.

Child behavior problems

Third-grade teachers reported on the child's behavior problems with the teacher report form (TRF; Achenbach, 1991). Teachers responded to 120 items indicating how well a range of behavioral and emotional problems describe the child currently or within the last 2 months [0 = *not true* (*as far as you know*), 1 = *somewhat or sometimes true*, 2 = *very true or often true*]. The Cross-Informant Program for the CBCL/4–18, YSR, and TRF, purchased from the Child Behavior Checklist, University Medical Education Associates, Inc., was used to score the raw data. The internalizing scale includes the withdrawn, somatic complaints, and anxious/depressed subscales. The externalizing scale includes the delinquent and aggressive behaviors items. Standardized *t* scores were used with a possible range of 36–100 for internalizing and 39–100 for externalizing. Both are reliable within and across waves.

Analysis Plan

Mother–child interaction styles were created using latent profile analysis (LPA), which categorizes unobserved heterogeneity on continuous variable indicators with a latent categorical factor. Individuals are classified based on a probability of group membership in each category. Logistic regressions were used to test how characteristics of mothers and children were associated with the probability of group membership.

In addition to being tested in the primary analyses, family income-to-needs ratio, child ethnicity, and child sex were examined as potential covariates. The demographic characteristic was included as a control in the regression analyses for maternal and child characteristics when it was related to either conflict or sensitivity, in addition to a maternal or child psychosocial factor. Income-to-needs ratio and ethnic minority status were related to maternal sensitivity and some psychosocial factors; they were, thus, included as controls in the relevant analyses. Income-to-needs ratio was related to intimacy with a partner, depressive symptoms, and authoritarian childrearing beliefs. Ethnic minority status was related to depressive symptoms, authoritarian childrearing belief, and externalizing behaviors.

Results

Preliminary Analyses

Descriptive data for study variables are shown in Table 1. Mplus version 6 software (Muthén & Muthén, 2010) was used to conduct all analyses. Full information maximum likelihood, a modeling method that estimates parameters based on available and implied values (Schlomer, Bauman, & Card, 2010), was used to account for missing data.

Table 1. Descriptive Data for Study Variables

Variable	Mean	SD	Range	2	3	4	5	6	7	8	9	10	11
1. Sex	—	—	—	−.06	.02	−.03	.20	−.06	.01	−.02	.05	.00	−.02
2. Ethnic minority	—	—	—		−.16**	−.31**	−.01	.00	.08*	.25**	.03	.06	.13**
3. Income	4.32	3.04	.1–21.3			.23**	−.05	.12**	−.18**	−.34**	.02	−.07	−.06
4. Sensitivity	17.16	2.86	5–21				−.06	.03	−.09**	−.36**	−.04	−.09*	−.22**
5. Conflict	15.09	5.85	7–33					−.20**	.26**	.11**	.07	.04	.18**
6. Intimacy	3.89	.90	1–5						−.45**	−.02	−.04	.01	−.07
7. Depression	7.63	7.98	0–50							.17**	.02	.04	.13**
8. Authoritarian beliefs	56.79	14.20	26–106								.04	.06	.20**
9. Friend conflict third	44.91	9.28	15–60									.07	.11**
10. Internalizing third	48.81	8.98	36–78										.30**
11. Externalizing third	49.71	8.27	39–79										

*$p < .05$, ** $p < .01$.

A Typology of Mother–child Interaction Style

In order to determine the appropriate number of groups, latent profile models ranging from 2 to 5 groups were examined using Mplus. Researchers employing latent grouping models should consider four important categories of fit: interpretation, relative fit information criteria, likelihood ratio tests, and accuracy in classifying individuals (Ram & Grimm, 2009). Interpretation refers to the fact that models need to attain proper convergence and that the addition of groups should add useful information to the study (Ram & Grimm, 2009). Models with groups represented by very small numbers of people or groups that do not differ meaningfully from each other may not be useful.

To evaluate the three latter criteria, Table 2 displays all relevant fit statistics for each solution. Bayesian information criterion (BIC) and sample size-adjusted BIC are commonly used to compare the fit of LPA models with different numbers of groups and are considered important indicators of group enumeration (e.g., Collins, Fidler, Wugalter, & Long, 1993; Sclove, 1987). Lower BIC values in relation to the other models indicate a better fit to the data (Muthén & Muthén, 2000). The Vuong-Lo-Mendell-Rubin likelihood ratio test (LRT) and the Lo-Mendell-Rubin (LMR) sample size-adjusted likelihood ratio test were used to compare K vs. $K-1$ profiles; significance values indicate whether the model is an improvement upon a previous model with one less profile (Lo, Mendell, & Rubin, 2001). Average posterior probabilities for each class were also used to assess classification quality. Individuals placed in their most likely class should have a high probability of membership in that group, and consequently a low probability of membership in other groups (Muthén & Muthén, 2000). And finally, although not considered a central indicator of group enumeration (Muthén & Muthén, 2000; Nylund, Asparouhov, & Muthén, 2007), entropy was evaluated with values closer to 1 (range 0–1, > .80 preferred), indicating clearer delineation (Celeux & Soromenho, 1996).

Table 2. Latent Profile Analysis Fit Statistics for Two- to Five-profile Solutions

# of Groups	Fit statistics				
	BIC	SSA-BIC	p LMR (adj LRT)	Posterior probability	Entropy
2	8891.51	8869.28	.00 (.00)	.85–.98	.89
3	8868.44	8836.68	.01 (.02)	.83–.89	.72
4	8856.64	8815.36	.14 (.14)	.82–.91	.78
5	8841.99	8791.18	.04 (.05)	.77–.88	.77

Note: Variances were constrained to be equal across groups in all models. BIC = Bayesian information criterion; SSA-BIC = sample size-adjusted Bayesian information criterion; p LMR (adj LRT) = p values for Lo-Mendell-Rubin likelihood ratio test for K vs. $K-1$ profiles (sample size-adjusted likelihood ratio test).

Another important consideration in model selection is the use of model constraints on the variances (Ram & Grimm, 2009). Although variances are estimated for all manifest variables, researchers must decide whether to allow variances to differ across groups. In the current study, two-, three-, four-, and five-profile models were tested with and without the variance constraint. All models with freed variances were found to have poor fit according to our ability to accurately and confidently categorize individuals. Entropy values were particularly low, ranging from .48 to .58, and posterior probabilities of group membership were as low as .68. Therefore, only models with variances set to be equal across groups were further considered.

Although entropy and posterior probabilities were particularly high in the two-group model, fit statistics that provide comparisons to other models suggested that the two-group solution was not preferable (see Table 2). BIC values were substantially higher than other models, and the likelihood ratio tests suggested that a model with three groups provided a significant improvement in fit over the two-profile solution. The remaining models were similar in terms of entropy and posterior probabilities, but BIC and LMR provided inconsistent results. BIC and sample size-adjusted BIC values decreased as additional groups were added to the models; however, LMR and the adjusted LRT statistics suggested that adding an additional group beyond three profiles was not an improvement in overall fit. The five-group model appeared to be an

improvement on the four-group model, but the interpretation of this is less clear considering the five-group model is an improvement compared with a model that was already determined to be rejected based on these statistics. Considering these contradictory findings, the three-, four-, and five-group models were further evaluated for interpretability and usefulness.

The three-profile solution included three groups with 27 percent, 63 percent, and 10 percent of the sample based on estimated probabilities. The four-profile solution replicated the structure of the three groups found in the previous model and included a fourth group representing only 2 percent of the sample (n = 19). The five-profile solution was similar in that it included similarly structured groups from the previous four-group model and included a fifth group with only another 2 percent of the sample (n = 16). Based on the lack of added usefulness in the four- and five-profile solutions due to very small sample sizes preventing reliable group membership prediction in the next step of the analyses, the three-profile model was determined to be the best-fitting solution.

Figure 1 shows the structure of the latent profiles for mother–child pairs in the three-group model. To start, an *agreeable* style was identified. Agreeable mother–child pairs were characterized by high sensitivity (17.93) and low conflict (12.18). A *dynamic* style was also identified. Dynamic mother–child pairs were characterized by high sensitivity (17.56) and very high conflict (21.78). Finally, a third mother–child style, somewhat between the hypothesized *abrasive* and *detached* styles, was found, characterized by very low sensitivity (11.09) and moderate conflict (16.21). We labeled this style *disconnected*. The agreeable style was most common at 63 percent (n = 506) of the sample, followed by the dynamic style at 27 percent (n = 217) and the disconnected style at 10 percent (n = 77). Profiles shared a common variance for sensitivity (*SD* = 2.04) and conflict (*SD* = 4.07).
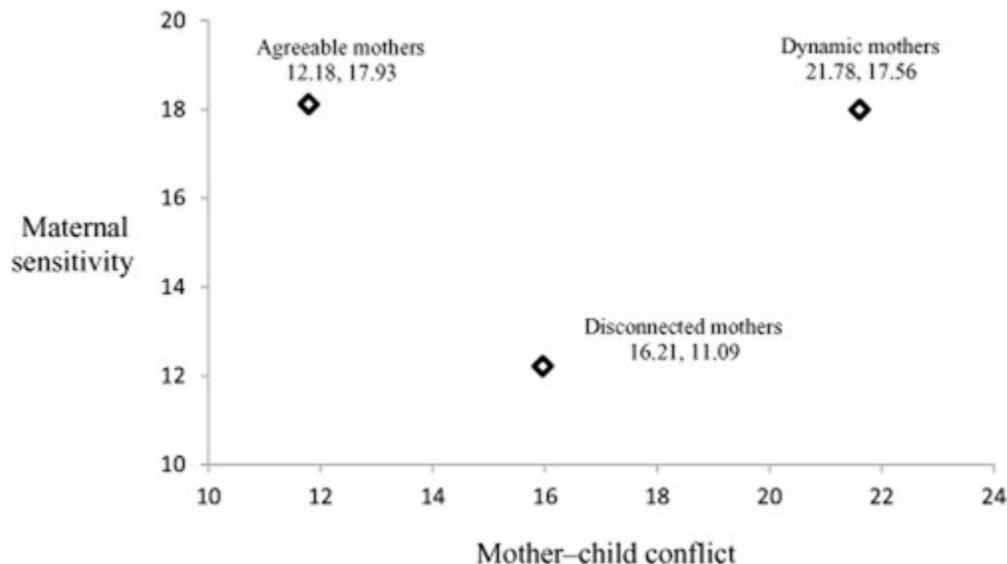

Figure 1. Mother–child Interaction Styles.

Sensitivity and conflict means were compared across groups using independent sample *t*tests to better describe and differentiate the groups. All groups were differentiated based on mean maternal sensitivity and mean mother–child conflict. Agreeable mother–child pairs were slightly

more sensitive than those in dynamic pairs, $t(736) = 2.20$, $p < .05$, and mothers in disconnected pairs were significantly less sensitive than those in agreeable pairs, $t(612) = -27.48$, $p < .01$, and dynamic pairs, $t(274) = -23.64$, $p < .01$. Dynamic mother–child pairs had more conflict than agreeable pairs, $t(736) = 28.27$, $p < .01$, and disconnected pairs, $t(274) = 10.08$, $p < .01$; disconnected pairs had significantly more conflict than agreeable pairs, $t(612) = 8.02$, $p < .01$.

Characteristics Associated With the Probability of Group Membership

Demographic Characteristics

Family income-to-needs ratio and ethnic minority status were included in the same logistic regression analysis due to the confounding effect of income-to-needs and ethnicity in the current sample. Child sex was tested separately. Log odds and odds ratios can be seen in Table 3. Child sex was unrelated to group membership, contrary to our hypothesis. Disconnected parent–child pairs had significantly lower income-to-needs ratios and were more likely to be of an ethnic minority group than dynamic or agreeable pairs.

Table 3. Demographic and Psychosocial Characteristics of Families Predicting Interaction Style

Variable	Log odds B (SE B)			Odds ratio			Means		
	1 vs. 2	1 vs. 3	2 vs. 3	1 vs. 2	1 vs. 3	2 vs. 3	1	2	3
Demographic									
Income-to-needs	.03 (.05)	.70** (.19)	.67** (.20)	1.03	2.01	1.95	4.56	4.31	2.19
Child sex	−.50 (.27)	−.74 (.55)	−.24 (.59)	.61	.48	.79	—	—	—
Child ethnicity	.45 (.46)	−1.64** (.47)	−2.09** (.59)	1.57	.19	.12	—	—	—
Maternal									
Depressive symptoms	−.08** (.02)	−.04 (.02)	.05* (.02)	.92	.96	1.05	5.91	11.29	9.90
Authoritarian beliefs	−.03* (.01)	−.06** (.01)	−.03* (.01)	.97	.94	.97	53.46	58.17	68.97
Partner intimacy	.51** (.13)	.07 (.19)	−.43* (.20)	1.67	1.07	.65	4.01	3.58	3.87
Child longitudinal									
Friend conflict	−.26 (.16)	−.42* (.20)	−.16 (.22)	.77	.66	.85	1.46	1.57	1.65
Internalizing	−.00 (.01)	−.03 (.02)	−.03 (.02)	1.00	.97	.97	50.61	50.88	53.19
Externalizing	−.05** (.02)	−.07** (.02)	−.02 (.02)	.95	.93	.98	48.60	52.00	54.90

Note: 1 = agreeable, 2 = dynamic, 3 = disconnected.
* $p < .05$, ** $p < .01$.

Stress-related Characteristics of Mothers

Intimacy with a partner, depressive symptoms, and authoritarian childrearing beliefs were included in separate logistic regressions and significantly differentiated membership in the three mother–child interaction styles (see Table 3). Dynamic mothers reported less intimacy with a partner and higher depressive symptoms than mothers in agreeable or disconnected pairs. Dynamic mothers also held more authoritarian childrearing beliefs than agreeable mothers, and mothers in the disconnected style reported more authoritarian childrearing beliefs compared with dynamic and agreeable mothers.

Later Characteristics of Children

Children's conflict with a best friend, internalizing problems, and externalizing problems at third grade were tested in separate analyses. Compared with children in agreeable pairs, children in disconnected pairs experienced greater conflict with their best friend at third grade (see Table 3). Children in agreeable pairs had significantly lower teacher-reported externalizing problems in third grade than children in dynamic and disconnected pairs. No differences were found in internalizing problems.

Discussion

The goal of the current study was to examine qualitative differences in parent–child interaction styles. Previous theoretical work has suggested that parent–child conflict can be a valuable experience for children when it occurs in a supportive context (Dunn, 2004; Laursen & Hafen, 2010) because it gives them an opportunity to problem-solve and negotiate. Few empirical studies have been conducted to explore whether the nature and meaning of parent–child conflict vary depending on parent sensitivity. The few that are available have tested indirect effects, such as links from parent sensitivity to child conflict resolution to child behavior problems (Rubenstein & Feldman, 1993), or interaction effects, such as interactions between parent–child conflict and negative relationship qualities predicting adolescents' grades, delinquency, and withdrawal (Adams & Laursen, 2007). In the current study, we used a holistic approach to study parent–child conflict and parent sensitivity, and identified meaningful patterns of interaction among mother–child pairs.

Although we predicted four interaction styles, our results revealed a typology of three groups: agreeable, dynamic, and disconnected. The agreeable style was characterized by high sensitivity and low conflict, the dynamic style by high sensitivity and very high conflict, and the disconnected style by very low sensitivity and moderate conflict. The three interaction styles were significantly different from one another on mean sensitivity and conflict. Although the agreeable style was most common, a substantial portion of the sample (almost one third) was categorized as dynamic, suggesting that conflict between mothers and first graders is normative.

Although we were not surprised that the dynamic style was present considering theoretical and empirical reports, we were surprised at how high the conflict mean was for the dynamic group. Laursen and Hafen (2010) suggest that moderate conflict is likely most beneficial for children, as some conflict gives children an opportunity to improve their problem-solving skills, which may result in more successful peer interactions. On the other hand, high conflict, even in the context of a supportive relationship, is likely to create excess stress, anger, and anxiety in children. However, it is also possible that the dynamic conflict mean found in the current study is more normative than it appears due to its relative rank in a low-risk sample and the tendency for mothers to experience increased parent–child conflict as the child becomes more independent compared with the preschool years (McGue, Elkins, Walden, & Iacono, 2005).

As a whole, the latent profile findings were theoretically and statistically meaningful, as evidenced by the fact that mother–child conflict and maternal sensitivity could be used to classify participants in a useful way, and participants within styles were very similar in their interaction patterns to other pairs within the same group according to the membership probabilities provided by the LPA analyses. Our results also support the holistic approach taken

in the present study. The consistent differences in demographic and family stress predictors of the dynamic and disconnected groups suggest that measuring conflict alone would be less informative than combining conflict and sensitivity. Additionally, predictors of agreeable and dynamic pairs differed, suggesting that sensitivity alone also would not capture the variation in family interactions. Using a dyadic person-centered approach, we were able to explore how interdependent parenting behaviors create patterns of interactions in families.

We discovered interesting information about families in each interaction style by testing associations with demographic characteristics, family stressors, and children's later social competence after 2 years. Mothers in the dynamic group tended to report lower intimacy with their partner and higher depressive symptoms. Despite the sensitivity of these mothers, findings suggest that they experience psychological and relational stressors, likely contributing to the frequency of conflict in these pairs. Contrary to previous work on the benefits of parent–child conflict in supportive relationships (Cooper & Cooper, 1992; Dunn, 2004; Grotevant & Cooper, 1985), the dynamic style in the current study was associated with more externalizing problems among children compared with the agreeable style. Laursen and Hafen (2010) suggest that high conflict is not beneficial to children regardless of the level of sensitivity. Within our sample, there was not an interaction style characterized by high sensitivity and moderate conflict that would provide a useful comparison to further explore this hypothesis. On the other hand, children in the dynamic style did not report more conflict with a best friend compared with the other styles, despite the significantly higher mother–child conflict values associated with this interaction pattern. This suggests that there may be a qualitative difference between the type of conflict modeled in the dynamic style and that of the disconnected style, as children in the disconnected style experienced more best friend conflicts compared with children in the agreeable style. Lastly, these early school-aged children in dynamic pairs were no more likely to be male or female despite past research on conflict-ridden mother–daughter relationships in middle childhood (Collins & Russell, 1991).

Mothers fitting the disconnected style reported that they held authoritarian childrearing beliefs about raising children. Ethnic minority families were also more likely than European American families to be categorized into the disconnected style. Ethnic minority families in the USA, particularly African-Americans, Latinos, and Asian Americans, are more likely than European Americans to endorse expectations that children should have less autonomy and should respect parental authority (Dixon et al., 2008; Fuligni, 1998), the central features of the authoritarian childrearing beliefs examined here. In the current sample, children in the disconnected style showed greater externalizing behavior over time; however, given other findings indicating that more authoritarian childrearing approaches are adaptive in minority families (Parke & Buriel, 2006), further research into interaction styles in these families is needed.

Finally, agreeable pairs, characterized by high sensitivity and low conflict, tended to have higher family income and more positive maternal and child adjustment compared with the other styles. Consistent with findings on the importance of family income (Hair et al., 2008), our research suggests that higher income is linked to more positive family interactions, presumably as a result of lower stress. In all, these findings support the idea that economic and psychosocial stressors in the family context shape parent–child interaction patterns (Cox & Paley, 1997).

Although this study was innovative in identifying patterns of mother–child interaction, it is not without limitations. To start, only two-parent families were included in the sample. This was necessary in order to assess mothers' intimacy with a partner, but the criterion limited the economic and ethnic diversity within the study sample. An important consideration for future research is the inclusion of more diverse families in the identification of parent–child interaction patterns. Additionally, mothers reported on the family stress and parent–child conflict measures used in the current study, which increases the potential for mono-reporter bias. This limitation is tempered by the fact that a multi-method construct was used to operationalize the independent variable, and children and teachers reported on children's later social competence at third grade. Third, conflict and sensitivity were not measured in the same way or within the same interaction. Although we have reason to believe that these parenting behaviors are reasonably stable (Holden & Miller, 1999), it is possible that a parent who is sensitive in a structured play interaction may not be sensitive to the same degree in a conflict discussion with his or her child. Future research is needed that can incorporate multi-method, multi-informant designs, including observations of parents and children discussing conflict topics, and children's reports of conflict frequency. And finally, the early school-aged years were of interest in the current investigation, but it is important to note that many additional waves of maternal sensitivity and mother–child conflict data are available in the SECCYD. It is plausible that the number and structure of mother–child profiles will differ depending on the child's age and developmental level; this is another interesting direction for future research.

Overall, the current study incorporates an ecologically valid, holistic way of classifying mother–child pairs into distinct interaction styles based on a pattern of interaction, and examines how these patterns vary based on demographic and stress-related characteristics of family members and children's developmental outcomes. The study emphasizes a systems approach to understanding children and families, and underscores the importance of sensitive parenting among families with higher levels of stress and fewer emotional resources. Parent–child conflict may be more common among these families, but paired with high sensitivity, may not be uniformly detrimental to children's well-being.

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