Cognitive Response Repertoires to Child Noncompliance by Mothers of Aggressive Boys

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Cognitive response repertoires to videotaped child noncompliance episodes were examined in mothers of aggressive (MAs) and nonaggressive 4-6-year-old boys. Mothers provided open-ended solutions to three subtypes of child noncompliance under conditions of time pressure, or after they waited for 15 s to consider alternatives. Solutions were coded as assistance/facilitation, coercion, deference, or explanation/clarification. Compared with controls, MAs offered fewer explanation/clarification responses, more coercive responses, and fewer unique solutions during pressured responding. Two to 6 weeks later, mothers were videotaped while participating with their sons in a challenging block-building task. Maternal responses to the vignettes predicted conflict escalation during block building, even after rates of concurrent and past child noncompliance were partialled out. Implications for parent-training models are considered.

KEYWORDS: parenting; cognitions; aggression; noncompliance.

Disruptive behavior, including defiance, destructiveness, severe temper tantrums, and physical aggression, is the most frequent source of clinic referral among children and adolescents, and the most commonly cited child mental health concern among parents in the population at large (Anderson, Williams, McGee, & Silva, 1987; Offord, Adler, & Boyle, 1986; Quay, 1986; Wells & Forehand, 1985). Moreover, a corpus of literature suggests that such externalizing behavior patterns are quite stable, with a large proportion of oppositional preschoolers exhibiting disruptive behaviors in later childhood (see Campbell, Shaw, & Gilliom, 2000). In turn, disruptive children, particularly those who exhibit physical aggression, are at increased risk for engaging in delinquent and criminal activities as adults (Loeber, 1982). Indeed, longitudinal research has revealed that early aggression predicts later aggression across a wide age range (Cummings, Ianotti, & Zahn-Waxler, 1989; Farrington, 1991; Huesmann, Eron, Leffkowitz, & Walder, 1984; Rose, Rose, & Feldman, 1989), with stability that rivals that of IQ (Olweus, 1979, 1984).

Although child influences clearly play a role, it is well-documented that parenting practices, including power-assertive and negative affect-laden discipline strategies, predict the development and maintenance of aggression in children (Campbell, Pierce, Moore, Marakovitz, & Newby, 1996; Crockenberg & Litman, 1990; Loeber & Dishion, 1983; Parke & Slaby, 1990; Patterson, Capaldi, & Bank, 1991; Snyder, Edwards, McGraw, Kilgore, & Holton, 1994; Snyder, Schrepferman, & St. Peter, 1997). Frequent commands and attempts at control by mothers of 2-year-olds, for example, predict externalizing behaviors 3 years later (Zahn-Waxler, Iannotti, Cummings, & Denham, 1990), even when variance attributable to initial rates of child noncompliance is partialled out (Kuczynski & Kochanska, 1990). Furthermore, difficult temperament has been found to predict future noncompliance specifically for infants of angry and punitive mothers (Crockenberg, 1987). In contrast, teaching mothers to be more responsive and cooperative with their children during play sessions results in increased child compliance with subsequent maternal directives (Parpal & Maccoby,
Thus, several sources of evidence suggest that parenting practices play an important role in the development of child noncompliance and aggression.

Childhood aggression is often associated with coercive exchanges with parents that begin in the first 5 years of life (Campbell et al., 1996; Cole & Zahn-Waxler, 1992; Patterson et al., 1991). In such exchanges, parents and children escalate conflict by matching and oftentimes exceeding one another’s arousal levels (Snyder et al., 1994, 1997). Because this escalation tends to terminate the aversive interaction, heightened affective arousal and coercive attempts at control are negatively reinforced (Patterson, 1982). As a result, both the frequency and intensity of coercive exchanges increase over time. This is particularly troublesome given that the acquisition of self-regulatory strategies may be an important developmental challenge for preadolescent children (Maccoby & Martin, 1983), and given that dyadic interactions with parents are the primary source of such socialization (Maccoby, 1992).

The coercion model described above delineates specific parent–child interaction patterns that are related empirically to concurrent and future aggression (Patterson et al., 1991; Patterson, DeBaryshe, & Ramsey, 1989; Martin, 1981; Shaw & Bell, 1993; Snyder et al., 1997). Careful attention to microsocial behavioral sequences has made clear that mothers of aggressive boys are more likely to escalate conflict compared to mothers of nonaggressive boys, who tend to de-escalate conflict (Snyder et al., 1994). At the level of parental cognitions, these behavioral patterns are paralleled by social information processing deficits that may serve to maintain coercive processes. Social information processing models posit that parents’ escalation of conflict results from chronically negative attributional biases toward their aggressive children.

Several lines of research support this assertion. First, mothers of aggressive children differ from mothers of nonaggressive children regarding their expectations of future child behavior. Group differences are evident particularly when child behavior cues following maternal commands are ambiguous as to whether or not compliance is forthcoming (Strassberg, 1995, 1997). Thus, when children are not clearly compliant (i.e., when they exhibit moderate levels of cooperation or mild resistance), mothers of aggressive boys attribute more defiance to their sons, and anticipate more resistance than do control mothers. This may suggest that they are relying on negative, chronically accessible schemas of their children when interpreting and predicting behavior (Bargh, Lombardi, & Higgins, 1988; Fiske & Taylor, 1991). These attributional biases may be reasonable given a history of conflict with an aggressive child. However, mothers of aggressive children also attribute more ill intent to child misbehavior in general (Bauer & Twentyman, 1985; MacKinnon, Lamb, Belsky, & Baum, 1990; Strassberg, 1995), and tend to believe that noncompliance results from an enduring personality trait that adults have little control over (Bugental, Blue, & Cruzcosa, 1989; Dix & Lochman, 1990). In turn, attributions of control predict affective reactivity in response to child noncompliance (Bugental, Blue, & Lewis, 1990; Bugental et al., 1993). Thus, a picture emerges in which chronic attributional biases contribute to a coercive parenting style that promotes increased child aggression.

Research also suggests that harsh and otherwise ineffective parents exhibit cognitive deficits compared to controls when generating solutions for child noncompliance (Azar, Robinson, Hekimian, & Twentyman, 1984; Hansen, Pallotta, Tishelman, Conaway, & MacMillan, 1989). For example, when provided with a child behavior problem, such as a tantrum in a store, these parents generate fewer alternative solutions, and elaborate less on the solutions they do provide. It is unclear, however, whether this performance decrement reflects an availability deficit in parenting repertoires, or an accessibility bias toward particular types of solutions (e.g., coercion). In other words, parents of aggressive children may possess a limited repertoire from which to draw potential solutions, or they may be unable to access an otherwise adequate repertoire during stressful interactions. Although no studies have been reported addressing this question in parents, research with aggressive boys suggests an accessibility bias favoring coercive solutions to vignettes describing provocative peers. When aggressive boys and controls are presented with such scenarios and are asked to provide potential solutions, group differences are minimal when respondents are required to choose among competent and inept alternatives, but increase significantly when open-ended solutions are elicited (Lochman, Lampron, & Rabiner, 1989). Under the latter condition, aggressive boys generate fewer competent solutions, a lower proportion of verbal assertion solutions, and a higher proportion of action-oriented solutions than do controls.

These group differences are attenuated when aggressive boys are asked to think before responding. Rabiner, Lenhart, and Lochman (1990) reported that aggressive boys offered more conflict-escalating responses than controls when generating open-ended responses to vignettes immediately after stimulus presentations. However, when asked to wait for 15 s before responding and instructed to use the time to consider alternatives, group differences in aggressive responses disappeared. Thus, aggressive boys appear to possess adequate cognitive repertoires for dealing with peer conflict, yet rely on automated options that are less effective when responding under time pressure.
Maternal Responses to Child Noncompliance

Preliminary reports suggest a similar pattern in mothers of aggressive children. As noted above, deficiencies in both the depth and quality of alternative solutions for child noncompliance have been reported during open-ended responding by abusive and neglectful mothers (Azar et al., 1984; Hansen et al., 1989). However, maternal response generation deficits were not observed by Leisring and O’Leary (1996), who reported no difference between over-reactive mothers and controls in their ability to evaluate the usefulness of effective and ineffective parenting options. These mothers could therefore identify effective parenting behaviors, despite research by others indicating that they are unlikely to offer effective solutions. This may suggest that mothers of aggressive boys also suffer from an accessibility bias when faced with child noncompliance.

The primary purpose of the present investigation was to examine directly the cognitive response repertoires to child noncompliance of mothers of aggressive and nonaggressive children. The availability deficit and accessibility bias hypotheses were explored by assessing both the quality (competent versus unskilled) and depth (number) of mothers’ responses to a series of videotaped child noncompliance vignettes, under both relaxed and time-pressured conditions. The former condition was designed to assess maternal response repertoires under favorable circumstances, whereas the latter, detailed below, was designed to approximate the task demands of ongoing dyadic interactions. Based on the research outlined above, it was hypothesized that mothers of aggressive boys would exhibit an accessibility bias when compared with control mothers. It was further predicted that the accessibility bias would be evident particularly during the task demands of pressured responding. Thus, an interaction was predicted in which deficiencies in responding were expected to be larger in mothers of aggressive boys under more difficult circumstances. In addition, it was hypothesized that mothers of aggressive boys would exhibit performance deterioration across trials as a function of attributional and affective priming, whereas mothers of controls would exhibit stable performance across trials. Consistent with previous research (e.g., Strassberg, 1995, 1997), all group differences were expected to be largest when ambiguous child behavior cues were employed.

A second objective was to predict maternal parenting behaviors from responses to the videotaped noncompliance vignettes. Thus, mothers and sons were invited to participate in a laboratory session in which they performed a challenging task together. It was hypothesized that ineffective maternal responses to the vignettes would predict negative control strategies in the laboratory task (e.g., coercive responses predicting escalation in mother–child conflict), and that such prediction would remain after removing variance attributable to child noncompliance.

METHOD

Participants

Two groups of participants were recruited, including 27 mothers of aggressive boys (MAs) and 23 mothers of nonaggressive control boys (MCs), all from suburban Long Island, New York. Members of the MA group were referred by either a local County Mental Health agency, or by the local branch of Head Start. Staff members of these agencies offered a one page description of the study to parents (mothers in all cases) of 4–6-year-old boys who were exhibiting significant aggression, either in the home or in their Head Start classroom. Mothers who expressed interest were contacted by phone to complete a screening instrument that included the Aggressive Behavior subscale of the Child Behavior Checklist (CBCL; Achenbach, 1991) and the Oppositional Defiant Disorder (ODD) portion of the Child Symptom Inventory (CSI; Gadow & Sprafkin, 1997). The CSI yields both dimensional scores and diagnostic cut-offs for many DSM-IV disorders. Symptoms are rated on a 4-point scale: 0 (never), 1 (sometimes), 2 (often), and 3 (very often), with ratings of two or higher considered positive for a given diagnostic criterion. Sensitivity and specificity of the ODD scale are adequate (Gadow & Sprafkin, 1997). Potential MA participants were retained if their son (a) met DSM-IV criteria for ODD, and (b) obtained a T-score on the CBCL Aggressive Behavior subscale placing him in the clinical range (i.e., above the 95th percentile) in reference to national norms. Thus, inclusion in the MA group was based on both the opinion of service-providing professionals within the community, and marker-reports of aggressive and oppositional behaviors. Participants in the MC group were recruited from local Head Start classrooms and local community preschools. In both cases, teachers were asked to identify children who were well-adjusted. Based on these nominations, offers for participation in the study were extended to parents. Potential MCs were interviewed in the same manner as MAs, and were retained if their son did not meet criteria for ODD, and did not score in the clinical range on the CBCL. Descriptive statistics for both groups are reported in Table I. Note that Aggressive Behavior scores were also obtained from teachers using the Teacher Report Form (TRF; Edelbrock & Achenbach, 1984). Because TRF data were not available for seven aggressive boys and two controls, these scores were not used for
<table>
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<th>Variable</th>
<th>MAs (n = 27)</th>
<th>MCs (n = 23)</th>
<th>M</th>
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<th>M</th>
<th>SD</th>
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<td>Mothers’ education (years)</td>
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<td>4.52</td>
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<th>M</th>
<th>SD</th>
<th>F</th>
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</table>

Note. MAs: mothers of aggressive boys, MCs: mothers of controls. CBCL: Child Behavior Checklist (Achenbach, 1991); TRF: Teacher Report Form (Edelbrock & Achenbach, 1984); CSI: Child Symptom Inventory (Gadow & Spratkin, 1997).

* CBCL teacher data were unavailable for seven aggressive boys and two controls.

* $\chi^2(2) = 1.16$, ns. Four MAs and six MCs declined to provide race information.

...and MCs on attributions for child misbehavior, expectations of future behavior, and affective arousal (Strassberg, 1995, 1997), and because they represent a range of child noncompliance. In each vignette, a child actor played with any of a variety of toys scattered around a clinic waiting room. A female graduate student, posing as the child’s mother, then issued one of six compliance requests, to which the child responded with either overt noncompliance, bargaining/negotiation, or ignoring. Six distinct noncompliance requests were employed to ensure that a reasonable sampling of potential directives was represented (e.g., “put the ball down,” “close the door,” “pick up the blocks”), eliminating request specificity as an alternative explanation for any detected effects. A total of six graduate student actors were paired with six child actors, and each dyad performed one overt, one bargaining/negotiation, and one ignore interaction. Thus, the 18 stimulus vignettes varied along three dimensions, including child behavior type, maternal command, and the composition of dyad members.

Each participant mother was presented with 6 of the 18 vignettes, including two portraying overt noncompliance, two portraying bargaining/negotiation, and two portraying ignoring. These vignette subsets also included all six of the maternal commands and dyad membership compositions. Thus, no participant saw the same command or dyad twice. The order of vignette presentation was designed to be counterbalanced across participants, ensuring that each vignette preceded and was followed by all others an equal number of times. Reliability of the child noncompliance stimulus types was assessed by having five graduate students code each of the 18 vignettes as either overt noncompliance, bargaining/negotiation, or ignoring. Results were compared with the first author’s a priori classifications. Agreement was 97% for overt noncompliance, 100% for bargaining/negotiation, and 100% for ignoring.

**Procedure**

Child noncompliance stimuli were presented to mothers during visits to their homes that lasted for approximately 1 hr. In the first part of the session, informed consent was obtained, and the videotaped vignette sets were presented to participants. In the latter part of the visit, questionnaire data were collected as part of a larger project assessing the parenting practices of both mothers and fathers of aggressive children. Video stimuli were always presented first so that participants’ responses to the stimulus sets would not be contaminated by the content of the questionnaires. In all cases, the experimenter was blind to the group status (MA versus MC) of the mother.

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Table I. Sample Descriptive Characteristics by Group
Prior to stimulus presentations, participants were instructed that they would view a short series of videos depicting mothers and their children “doing things together that moms and kids do a lot.” They were then instructed to imagine that the presented interactions were occurring between themselves and their sons. Mothers were informed that they would be asked to provide solutions to the child’s behavior in each vignette, after the videotape was stopped by the research assistant. To ensure that all understood the task, a sample vignette was presented, after which participants were corrected if they did not respond in the prescribed fashion. The sample vignette was then readministered, and further instruction was provided if needed. Maternal responses were recorded on audiotape for later coding.

**Pressured and Reflective Conditions**

Half of the mothers responded to the vignettes within a time-pressured condition where they were instructed to provide as many alternatives for dealing with the misbehavior as possible within 15 s. As noted above, this condition was intended to elicit maternal frustration and mimic the task demands of actual noncompliance situations. Thus, a rapid response rate was promoted by urging mothers after the example and after each vignette to respond a bit faster if possible. Additionally, mothers were cued to continue responding immediately after providing each solution, with statements such as “tell me another way,” and “what else.” The remaining half of the sample responded within a reflective condition where mothers were instructed to wait for 15 s before providing solutions to each vignette, and to use the time to consider alternatives. Mothers were then asked to provide their preferred solution, followed by as many alternatives as possible, with no time limit imposed. Participant families were paid $40 for this component of the study.

**Coding of Responses**

Mothers’ responses to the noncompliance vignettes were coded into five mutually exclusive and exhaustive categories by three research assistants who were blind to the experimental hypotheses and the group status of participants. Coding categories included (a) assistance/facilitation, or responses in which mothers offered instrument help or facilitated compliance through gameplaying (e.g., “I’ll help you clean-up,” “Let’s sing the clean-up song”); (b) coercion, or responses likely to escalate conflict including verbal threats or intent to use physical force (e.g., “Put the ball down now!” “Do you want a spanking?”); (c) deception, or responses intended to elicit compliance through dishonesty (e.g., “You need to close the door because there’s someone outside who wants to steal your toys”); (d) deference, or responses in which the choice to comply was effectively left up to the child (e.g., mother indicates she would let the noncompliance continue); and (e) explanation/clarification, or responses in which mothers explained their request, queried the child about his noncompliance, or outlined the consequences for continued noncompliance (e.g., “Is there a reason you don’t want to put your coat on?” “If you don’t put your coat on you’re going to time-out”). A more detailed description of the coding scheme is available from the first author upon request. Because deception responses occurred at a low base rate (.71%), the category was dropped from all analyses. Proportions of use for the remaining codes are reported by group and condition in Table II.

To assess reliability of the coding categories, 48% of the mothers’ responses were coded independently by two research assistants. The averaged kappa statistic across these independent codings was .89 (range = .71–1.0). Responses were also coded for originality, or whether or not the participant mother had used the same specific option in her previous responses to the current child behavior.

<table>
<thead>
<tr>
<th>Response type</th>
<th>Reflective</th>
<th>Pressured</th>
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<tbody>
<tr>
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<td>MAs (n = 14)</td>
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</tr>
<tr>
<td>OVT</td>
<td>B/N</td>
<td>IGN</td>
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<tr>
<td>Assistance/facilitation</td>
<td>.09</td>
<td>.03</td>
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<tr>
<td>Explanation/clarification</td>
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<td>.55</td>
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<td>Coercion</td>
<td>.12</td>
<td>.15</td>
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<td>Deference</td>
<td>.37</td>
<td>.26</td>
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Note: Some columns do not add to one because the Deception category, which occurred at a .71% base rate, was dropped. MAs: mothers of aggressive boys; MCs: mothers of controls. OVT: overt noncompliance; B/N: bargaining/negotiation; IGN: ignoring; TOT: total.
noncompliance vignette. However, if the same response was offered while viewing a subsequent vignette, it was counted as original on first use. Note that two or more original responses could be offered in the same coding category (e.g., explanation/clarification). The averaged kappa statistic was .90 (range = 0.58–1.0) for the 48% of responses that were independently coded as original or repeated.

Laboratory Visit

Task

All mothers and their sons were invited to the University Psychology Department for a laboratory visit that included a 20-min cooperative block building task. Of the 50 mothers who participated in the initial home visit phase of the project, 39 also took part in the laboratory session, which was scheduled between 2 and 6 weeks after the home visit. The remaining 11 mothers either declined continued participation, or did not show up for lab appointments and could not be contacted to reschedule. No significant differences were found between the attrited and retained participants on indices of child aggression, including the CBCL (M = 19.0 vs. 17.7), F(1, 48) = .19, p = .67, and the CSI (M = 10.7 vs. 9.7), F(1, 48) = .21, p = .65. Similarly, significant differences were not found on rates of maternal responding for any of the coded categories, all F's < 2.00, all ps > .15.

Sessions began with mothers and their sons engaged in 20 min of free play in a 20' x 20' laboratory space that was furnished as a living room. This period of unstructured interaction was intended to allow participants to become as acclimated to the surroundings as possible prior to the experimental task. In one corner of the room was a box containing 32 large foam geometric shapes. After 20 min of free play were over, mothers were instructed via a bug-in-the-ear device to dump the contents of this box on the floor to begin the block building task, the nature of which had been explained to them before the session began. Attached to the side of the box was a large diagram outlining four configurations of blocks that mothers were instructed to build with their sons, in order, one on top of the other. Each configuration required that multiple blocks of various shapes be arranged exactly as prescribed. Mothers were further instructed that they could provide their child with instructions, but that he was required do the hands-on work. Mothers who violated this request were reminded immediately through the bug-in-the-ear device to refrain from assembling the configurations. The task was difficult, with few dyads finishing in the 20 min allotted. Those who did finish were instructed to demolish their construction and place the blocks back inside the box. Because the blocks would fit only if arranged in the same manner as outlined in the diagrams, this effectively required participants to start over. No dyads completed this task. All interactions were videotaped for later coding through a one-way mirror.

Coding of Maternal and Child Behaviors

As part of a larger coding effort in which maternal and child behaviors during the lab task were examined, two variables specific to mother-child conflict escalation were extracted. Maternal behaviors were coded for the number of start-ups, or instances in which neutral behavior or compliance on the part of a child was met with maternal irritability, harshness, or increasing affective intensity. Inclusion of this variable followed from works by Patterson (1982), and by Snyder and colleagues (Snyder et al., 1994, 1997), who have demonstrated that parents of aggressive children tend to escalate conflict in such a manner. The mean number of start-ups during block building was 2.73 (SD = 1.79) for MAs, and 1.08 (SD = .22) for MCs, F(1, 37) = 11.62, p = .001. Interrater reliability was assessed by having two research assistants rate 13% of the 20-min interactions. These codings yielded an intraclass correlation coefficient of .88 for maternal start-ups.

In addition, child noncompliance events were also tallied. Instances of both ignoring and refusing to comply with maternal directives were included. These counts served as a control variable in analyses of maternal start-ups, presented below. The mean number of noncompliance events during block building was 18.04 (SD = 12.31) for children in the aggressive group, and 9.86 (SD = 8.74) for children in the control group, F(1, 37) = 4.43, p = .04. The intraclass correlation coefficient from the 13% of interactions coded by two raters was .94.

RESULTS

Quality of Maternal Response Repertoires

Prior to assessing the content of maternal response repertoires, the total number of responses was assessed across group and experimental condition. Response rate did not differ across groups, with MAs providing an average of 28.5 (SD = 10.2) solutions compared with 24.6 (SD = 7.9) by MCs, F(1, 48) = 2.30, p = .14. Response rate did not differ as a function of condition either, with those responding under time pressure providing an average...
of 28.2 (SD = 9.7) solutions compared with 25.1 (SD = 8.5) by those responding after reflection, $F(1, 48) = 1.27, p = .27$. Because no group or condition effects were found in response rates, all subsequent analyses were conducted using proportions rather than raw scores.\(^4\) The effects of group status, condition, and child behavior type on the content of maternal responses were analyzed using repeated measures analyses of variance (ANOVA). Separate $2$ (MAS vs. MCs) $\times 2$ (pressured vs. reflective) $\times 3$ (overt noncompliance, bargaining/negotiation, and ignoring) ANOVAs were conducted on the proportions of solutions offered in each of the four response categories. To address potential violations of the sphericity assumption in the ANOVAs, Greenhouse-Geisser-corrected degrees of freedom were employed in all $F$-tests involving main effects and interactions of repeated measures. Group, condition, and noncompliance subtype effects are considered for each maternal response category below. Interactions effects are omitted, as all were nonsignificant.

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\(^4\)Because proportions are dependent on one another, it is generally the case that group differences observed within one category will be accompanied by differences in one or more additional categories. This can be misleading when the absolute number of responses, collapsed across categories, differs between groups. As noted above, however, group differences in absolute numbers of responses were not observed in the present experiment. Proportions are therefore reported, as they carry the advantage of placing all categories on a common metric. Of note, analyses of raw scores yielded the same pattern of results.

**Assistance/Facilitation**

Maternal assistance/facilitation responses are presented by group and noncompliance subtype in the upper left panel of Fig. 1. A main effect of noncompliance subtype was found, $F(1, 46) = 6.54, p < .01, \epsilon = 0.90$. Post hoc comparisons using the Tukey test for unequal ns indicated that participant mothers were more likely to offer instrumental help following overt noncompliance (11%) than following bargaining/negotiation (6%) or ignoring (4%). No difference was found between the latter two subtypes.

**Explanation/Clarification**

For explanation/clarification responses, main effects were found for both group, $F(1, 46) = 6.54, p = .01$, and noncompliance subtype, $F(1, 46) = 10.84, p < .001, \epsilon = 0.87$. As depicted in the upper right panel of Fig. 1, MCs offered more explanations than MAS. Follow-up comparisons indicated that this difference was significant only in response to the ignoring vignettes (66% vs. 48%), $F(1, 46) = 11.94, p = .001$. Post hoc analyses conducted as a follow-up to the noncompliance subtype effect indicated that all mothers were more likely to provide explanations in response to bargaining/negotiation (56%) and ignoring (53%) than in response to overt noncompliance (40%). No difference was observed between bargaining and ignoring.
Coercion

Maternal coercion responses are presented in the lower left panel of Fig. 1. Significant main effects were uncovered for both group, $F(1, 46) = 4.59, p < .04$, and condition, $F(1, 46) = 5.43, p = .02$. Members of the MA group offered a greater proportion of coercive responses than MCs. As with the explanation/clarification responses, follow-up analyses indicated that this difference was significant only in response to the ignore vignettes (26% vs. 14%), $F(1, 46) = 7.31, p < .01$. Although not pictured in Fig. 1, mothers were more likely to use coercive responses during the pressured condition than during the reflective condition, irrespective of group status (24% vs. 17%), $F(1, 46) = 5.43, p = .02$.

Defence

For defense responses, presented in the lower right panel of Fig. 1, a main effect of noncompliance subtype was found, $F(1, 46) = 6.71, p < .01$, $\epsilon = 0.97$. Post hoc comparisons indicated that participant mothers were more likely to endorse deferring to child demands in response to overt noncompliance (31%) than in response to bargaining/negotiation (19%) or ignoring (17%). No difference was found between the latter two subtypes.

Depth of Maternal Response Repertoires

As reported previously, the total number of responses did not differ as a function of group or condition. Further analyses were conducted, however, to explore potential differences in the number of original responses offered by participants. A 2 (MAs vs. MCs) $\times$ 2 (pressured vs. reflective) $\times$ 3 (overt noncompliance, bargaining/negotiation, and ignoring) repeated measures ANOVA in which proportions of original responses were entered yielded a Group $\times$ Noncompliance subtype interaction, $F(1, 92) = 3.66, p < .03$, $\epsilon = 0.93$. Follow-up analyses indicated that MCs were more likely to repeat themselves verbatim following the ignore vignettes than were MAs, $F(1, 46) = 3.93, p = .05$. As illustrated in Fig. 2, a Group $\times$ Condition interaction was also uncovered, $F(1, 46) = 5.37, p < .03$, with MAs offering fewer original responses in the time-pressured condition than MCs, $F(1, 46) = 5.23, p < .03$.

Trends in Responding Across Trials

Trends in responding were assessed by analyzing linear growth functions across trials (Rogosa, Brandt, & Zimowski, 1982). Thus, least-squares regression lines were calculated through the number of each maternal response type (assistance, explanation, coercion, and defense), at each of the six trials, for each participant. The slopes of the regression lines were used to index changes in performance across the response generation task. Group differences in response trends were assessed by conducting ANOVAs in which growth function slopes were predicted by group status (MAs vs. MCs) and experimental condition (pressured vs. reflective). Because group differences were not observed for any of the intercept values, intercepts were not employed as covariates. Results of the growth curve analyses are presented in Table III. Condition effects and Group $\times$ Condition interactions were all nonsignificant. However, group differences in response trends were uncovered for both explanation/clarification responses and total responses. In both cases, MAs exhibited reduced responding across trials, whereas MCs exhibited increased responding (see Fig. 3).

Predicting Maternal Behavior From Cognitive Response Repertoires

Relations between maternal behaviors to the noncompliance vignettes and start-ups during the subsequent lab visit were explored using hierarchical linear regression. To reduce the number of regressions run, only those response types that yielded group differences in previous analyses (i.e., coercion and explanation/clarification responses) were employed. It was of particular interest to see if the coercion and explanation/clarification variables could account for maternal behavior during the task, over and above the contribution of child noncompliance. Thus, the number of child noncompliance events was entered at Step 1 of the hierarchical regressions, before entering the maternal response repertoire variables at Step 2. In addition, mother-report CBCL Aggression scores were entered at Step 1 in an effort to control for the impact of a history of child noncompliance on maternal behavior. Two hierarchical regressions were run. In the first, maternal
start-ups were predicted by the number of coercive and explanation/clarification responses. In the second, maternal start-ups were predicted by growth in coercive and explanation/clarification responses across trials. In the latter analysis, intercept values were added at Step 1 to control for initial rates of responding. Results are presented in Table IV. Both of the maternal response sets were significant predictors of start-ups during the lab visit, over and above rates of child noncompliance and CBCL scores. Coercive responses and growth in coercive responses to the vignettes were associated positively with maternal start-ups, whereas explanation/clarification responses and growth in explanation/clarification responses were associated negatively with maternal start-ups.

**DISCUSSION**

Several hypotheses were offered in the introduction of this paper. First, it was predicted that MA would exhibit an accessibility bias toward less competent solutions to child noncompliance under conditions of time pressure. Despite offering an equivalent number of solutions to MCs, MAs offered fewer original responses in the pressured condition. They were thus more likely to repeat themselves when asked to respond quickly. In contrast, the proportion of original responses offered by MCs was invariant of condition. This finding supports the accessibility bias hypothesis in MAs, and suggests that many options in their repertoires may not be accessed under stressful conditions.

It was also hypothesized that group differences in responding would be largest when ambiguous child behavior cues were employed. This hypothesis was supported partially. Although group differences were not observed in responses to the bargaining/negotiation vignettes, MAs were more likely than MCs to offer coercive solutions, and less likely than MCs to offer explanation/clarification solutions to child ignoring. Others (e.g., Strassberg, 1995) have suggested that when child behavior cues do not indicate clearly the likelihood of compliance with a directive, chronic attributional biases of malevolence toward misbehaving children are likely to drive parental behavior. Although it may argued that whether or not ignoring is ambiguous hinges on how reliably similar behaviors have predicted compliance or defiance within the interaction history of a specific dyad, the finding of a group differences is nevertheless of interest because it provides a potential
Table IV. Hierarchical Regressions of Maternal Start-Ups Predicted by Responses to Child Noncompliance

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Step</th>
<th>Predictor</th>
<th>$\beta$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total coercive and explanation/clarification responses</td>
<td>1</td>
<td>CBCL Aggression</td>
<td>.23</td>
<td>.14</td>
<td></td>
<td>.06</td>
</tr>
<tr>
<td>Maternal start-ups</td>
<td>2</td>
<td>Child noncompliance events</td>
<td>.40</td>
<td>.31</td>
<td>.17</td>
<td>&lt;.005</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Coercive responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Explanation/clarification responses</td>
<td>-.19</td>
<td>.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth in coercive and explanation/clarification responses</td>
<td>1</td>
<td>CBCL Aggression</td>
<td>.23</td>
<td>.14</td>
<td></td>
<td>.06</td>
</tr>
<tr>
<td>Maternal start-ups</td>
<td>2</td>
<td>Child noncompliance events</td>
<td>.40</td>
<td>.31</td>
<td>.17</td>
<td>&lt;.005</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Coercive responses intercept</td>
<td>.02</td>
<td>.18</td>
<td></td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Explanation/clarification intercept</td>
<td>.18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Coercive responses slope</td>
<td>-.34</td>
<td>.41</td>
<td>.23</td>
<td>&lt;.005</td>
</tr>
</tbody>
</table>

focal point for intervention, and because it replicates previous reports. Moreover, the finding provides further support for the accessibility bias hypothesis. Thus, the response repertoires of MAs and MCs were quite similar, except when respondents were required to respond immediately, or when they were required to respond to child ignoring.

The third hypothesis was that MAs would exhibit performance deterioration across trials. This hypothesis was supported by the total number of responses, and by the number of explanation/clarification responses offered by MAs. In both cases, MAs provided fewer solutions as the response generation task progressed, whereas MCs offered more solutions. Thus, the performance of MAs deteriorated with repeated exposure to child noncompliance, whereas the performance of MCs improved. Although maternal cognitions were not assessed directly, it is possible that continued exposure to child noncompliance resulted in attributorial or affective priming or both, with MAs becoming increasingly irritated as the vignettes unfolded. Although such group differences have been demonstrated elsewhere (e.g., Strassberg, 1995), this is the first formal assessment of trends in responding across repeated exposure to child noncompliance. Although maternal attributions were of interest in the present investigation, it was considered impractical to interrupt respondents to question them about their cognitions. Such an approach would likely compromise the external validity of the procedure by reducing or eliminating situational urgency. Thus, the extent to which performance differences were driven by cognitive vs. affective mechanisms could not be determined. As noted previously however, such a distinction may be of little practical significance given that bidirectional feedback has been demonstrated between cognition (i.e., attributional processes) and negative affect.

The final hypothesis, that mothers’ responses to the videotaped vignettes would predict their behavior during a subsequent laboratory session, was largely supported. Both the number and slope of coercive and explanation/clarification responses predicted maternal start-up behaviors during the block-building task, even after variance attributable to both concurrent and past child behavior was removed statistically. These findings are important for at least two reasons. First, they extend previous work suggesting that parental responses to noncompliance contribute to escalating parent–child conflict. Maternal response repertoires predicted start-up behaviors, which are known to predict concurrent and future aggression and delinquency (Snyder et al., 1994, 1997). Second, prediction of maternal start-ups from response repertoires obtained 2–6 weeks beforehand suggests that the assessment procedure was a valid indicator of future maternal behavior. In the past, laboratory analogue techniques such as the one employed here have been criticized on the grounds that they lack such external validity.

It is interesting to note one finding that was not specific to group status. Mothers of both groups were more likely to offer instrumental assistance and to defer to child demands following overt noncompliance than following bargaining/negotiation or ignoring. From a behavioral standpoint, this is somewhat surprising, and suggests that overt noncompliance may be functional for children of both MAs and MCs. In addition, the lack of group effects on these variables suggests that deferring to child demands is not a primary mechanism through which parenting elicits group differences in noncompliance.

The present study was not without limitations, the most obvious being the modest sample size. This was particularly evident in tests of Group $\times$ Condition interactions, where as few as 11 participants were represented in each cell. Thus, lack of power may have contributed
to the failure to find significant interaction effects. Moreover, although clear outliers were not observed on any of the criterion measures, it is possible that main effects were driven by very few participants. A similar argument holds for the regressions testing relations between maternal responding to the vignettes and subsequent behaviors during the lab visit, because several participants were lost for these analyses. Given these caveats, all findings should be interpreted with caution until replicated.

A second limitation was that all participant children were male, and all participant parents were mothers. This reflects the preponderance of boys represented at clinically significant levels of aggression, and the difficulty of recruiting fathers as participants in research with children. Thus, using the recruitment procedures outlined, a sufficient number of girls could not be obtained for inclusion in the study. Moreover, although an attempt was made to include fathers, too few were available to extract a sufficient number of interviews. We therefore do not know if the findings reported generalize to girls or to fathers. Although we are aware of no evidence suggesting that parental attributional processes differ depending on child gender, it is possible that different behavioral expectations for girls could affect parental performance on response repertoire tasks. This possibility might also be pursued in future research.

Finally, little information was collected about maternal characteristics that could serve as alternative explanations for observed differences in performance across groups. Differences in maternal IQ, for example, could explain the finding that MAs offered fewer original responses that MAs in the time-pressure condition. Although it might be argued that the lack of a similar difference in the reactive condition argues against such an effect, processing speed is a component of IQ, so this possibility cannot be ruled out.

Limitations aside, findings of an accessibility bias in MAs may have direct implications for parent training. Traditional intervention models have operated implicitly on the assumption that parents of aggressive children possess deficient repertoires for dealing with noncompliance. This has resulted in the investment of substantial amounts of time and effort on educating parents in effective responses to child misbehavior (e.g., Barkley, 1997; Patterson, Chamberlain, & Reid, 1982; Webster-Stratton, 1982). The importance of such efforts is not in dispute given the efficacy of contemporary parent-training models (for reviews see Campbell, 1990; McMahon & Wells, 1998). However, if accessibility biases are inhibiting the utilization of more effective responses that are within parents’ repertoires, then intervention efforts might be bolstered by greater emphasis on altering attributional biases, and on teaching affect regulation skills. Although the impact of negative affect on the accessibility of parenting repertoires was not tested directly in this study, effects of affective arousal on recall are well-documented (e.g., Parrott & Spackman, 2000). Given the heightened negative affect experienced by parents during coercive exchanges with children, it is possible and perhaps likely that improved affect regulation skills will enhance parental access to effective coping strategies that already exist in their repertoires. Moreover, direct evidence suggests that adding a parental affect regulation component to parent training enhances treatment efficacy. In treatment–outcome studies comparing parent-training protocols with and without affect management components, parents report greater program utility and easier implementation when placed in the former condition (Webster-Stratton, 1994).

The finding that maternal responses to vignettes presented under time pressure predicted later escalatory behaviors during a cooperative task also suggests that there may be some utility in incorporating similar standardized stimuli in parent-training protocols, both for purposes of assessment and instruction. Such an approach might involve observing parents’ responses to noncompliance vignettes, providing them with feedback vis-à-vis their performance, and engaging them in repeated vignette exposures while they practice effective responding. Additionally, parents might be queried about their affective reactions to the stimuli and coached in effective regulatory strategies. Doing so under conditions with demonstrated external validity represents a more structured approach than is employed in most current parent-training models, and might enhance generalizability of skill acquisition.

Given the relation between affective arousal and negative attributions noted in the introduction of this paper (Bugental et al., 1990; Bugental et al., 1993), it may be equally necessary to address cognitive biases of parents in our intervention efforts, the importance of which has been articulated by others (e.g., Johnston, 1996). Altering maternal attributions of child responsibility and intent for misbehavior before structured dyadic tasks results in group differences in maternal negative affect and child noncompliance (Slep & O’Leary, 1998). If attributional biases and affective arousal are in fact driving the choice of inept over competent parenting responses, attribution and affect regulation components might best precede psychoeducational components of parent training. It is our hope that future studies will continue to elucidate the role of parental cognitions in influencing child behavior, and that parent-training protocols will be informed by these research efforts.
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REFERENCES


Maternal Responses to Child Noncompliance


