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Tracing the Cascade of Children's Insecurity in the Interparental Relationship: The Role of Stage-Salient Tasks

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Abstract

This study examined whether children's difficulties with stage-salient tasks served as an explanatory mechanism in the pathway between their insecurity in the interparental relationship and their disruptive behavior problems. Using a multi-method, multi-informant design, 201 two-year-old children and their mothers participated in three annual measurement occasions. SEM analyses indicated that coder ratings of children's insecure responses to interparental conflict from a maternal interview predicted observer ratings of their difficulties with stage-salient tasks (i.e., emotion regulation, autonomy, resourceful problem-solving) one year later after controlling for initial stage-salient task performance. Stage-salient task difficulties, in turn, predicted experimenter reports of children's behavior problems one year later. Associations remained robust in the broader context of other pathways hypothesized in prevailing developmental cascade models.

Ways of coping with interparental conflict have important developmental implications for children's long-term functioning. According to emotional security theory (EST, Davies & Cummings, 1994), experiencing elevated, prolonged bouts of fear, distress, involvement, and flight responses to interparental conflict reflect children's underlying difficulties in preserving security. Assuming prominence in the hierarchy of human goals, these excessive concerns about safety and security are proposed to increase children's vulnerability to psychological problems. In support of this premise, behavioral signs of children's insecurity characterized by high levels of fear, distress, vigilance, and regulatory behaviors (e.g., flight, comforting seeking) in interparental conflicts have been shown to predict children's concurrent and subsequent psychological problems (e.g., Buehler, Lange, & Franck, 2007; Cummings & Davies, 2010; Rhoades, 2008). However, in spite of the empirical documentation of associations between children's insecurity in the interparental relationship and their mental health problems, far less is known about how and why emotional insecurity develops into broader patterns of child behavior problems, particularly during the early childhood years (Davies, Winter, & Cicchetti, 2006).

Accordingly, the present study was designed to address this gap by examining whether insecurity ultimately confers a risk for young children's disruptive behavior (i.e., externalizing) problems by undermining their ability to resolve salient developmental tasks.

By way of introduction, Figure 1 provides a conceptual blueprint of the primary pathways tested in the paper. Path 1 in Figure 1 specifically illustrates the developmental cascade proposed within EST. To test the first link of the hypothesized mediational pathway, a primary aim was to examine whether children's experience of insecurity in the interparental relationship at age two predicted subsequent problems approaching developmental tasks one year later after controlling for their developmental task functioning at age two. In turn, we further examined whether children's developmental functioning at age three predicted their behavioral problems at age four after taking into account their prior levels of behavior problems. To increase methodological rigor, predictions regarding the unfolding pathogenic processes underlying insecurity are examined in the context of other complementary developmental pathways. Guided by two prevailing developmental cascade models, we specifically examine whether already existing individual differences in temperamental vulnerability (i.e., Path 2 of Figure 1) and behavior problems (i.e., Path 3 of Figure 1) at age two may ultimately intensify children's behavior problems at age four by compromising their ability to successfully resolve developmental tasks at age three.

In providing direction to the objective of tracing children's behavioral problems over time, many developmental psychopathology models assume that developmental processes can be conceptualized as a series of stage-salient or developmental tasks that emerge as prominent challenges at a given period and remain important throughout an individual's lifetime (Cicchetti, 1993). At each developmental stage, children are faced with resolving a number of significant tasks across multiple domains of functioning that are likely to have significant repercussions for their mental health (Chase-Lansdale, Wakschlag, & Brooks-Gunn, 1995; Cicchetti, 1991; Sroufe & Rutter, 1984). Given that these tasks are already challenging in themselves, their successful resolution may be particularly sensitive to the risk associated with children's heightened distress and concerns about their security (Davies & Cummings, 2006). Consistent with this thesis, regulatory depletion models propose that regulation of responding in one domain or setting (e.g., emotional reactivity) causes impairments in other domains of functioning (e.g., problem-solving ability) by depleting a shared reservoir of resources (Baumeister, Vohs, & Tice, 2008). By extension, difficulties preserving security may deplete a common pool of self-regulatory resources, thereby creating deficits in negotiating emerging developmental challenges.

During the early childhood years, the developmental sequelae of insecurity are particularly likely to be instantiated in children's difficulties with three interrelated stage-salient tasks: the establishment of autonomy, regulation of emotions, and the adoption of problem-solving strategies that flexibly utilize internal and external resources to gain mastery in the face of formidable challenges (e.g., Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996; Davies & Cummings, 2006; Sroufe, Egeland, Carlson, & Collins, 2005; Waters & Sroufe, 1983). Effectively resolving these stage-salient tasks collectively requires the complex coordination of resources across multiple facets of functioning (Sroufe et al., 2005). Thus, in the context of a challenging, stressful set of problems, young children must be able to (a) regulate emotion by modulating their frustration and distress in a way that promotes task engagement, (b) establish autonomy through active, self-directed efforts to solve problems that are balanced by bids for assistance in times of significant difficulty, and (c) engage in resourceful problem-solving techniques that readily identify and manage potential internal and external resources to flexibly address the problem. According to the reformulation of EST (Davies & Sturge-Apple, 2007) prolonged concerns with insecurity are specifically proposed to set in motion multiple defense processes that have direct, pernicious implications for resolving these stage-salient tasks. For example, difficulties preserving a sense of security may limit children's opportunities to develop successful strategies for modulating emotion by amplifying and sustaining overwhelming experiences of distress and vigilance. Heightened prioritization of safety goals is further theorized to constrain the

exploratory and affiliation initiatives necessary to achieve autonomy. Likewise, increased proficiencies in identifying interpersonal threat accompanying insecurity are proposed to contract children's scope of information processing, with the resulting impairments in processing benign and constructive features of social experiences limiting the successful use and integration of internal and external resources necessary for problem-solving.

Difficulties in domains of emotion regulation, autonomy, or problem-solving are, in turn, proposed to reflect early patterns of maladaptation that, in the subsequent developmental cascade, pose a significant risk for the development of child psychopathology (Cicchetti & Toth, 1991; Masten & Cicchetti, 2010; Waters & Sroufe, 1983). Through the process of hierarchical motility, old psychological characteristics and structures evidenced in the early difficulties with stage-salient tasks are theorized to be carried forward and incorporated into evolving new structural properties that reflect behavioral problems (Cicchetti & Cohen, 1995). By lowering frustration tolerance and increasing disorganization in the face of stress, problems modulating negative emotion may increase displays of irascibility, antagonism, hostility, and moodiness and, over time, coalesce into behavior problems (e.g., Blandon, Calkins, Grimm, Keane, & O'Brien, 2010; Cole et al., 1996). Children's difficulties engaging in self-directed efforts (i.e., autonomy) and flexibly coordinating multiple resources to address challenges (i.e., problem-solving) may further impair executive functions (e.g., effortful control, working memory) necessary for successfully inhibiting and controlling disruptive impulses (Bierman et al., 2008; Eisenberg, Fabes, Gurthrie, & Reiser, 2000; Kochanska & Knaack, 2003; Riggs, Blair, & Greenberg, 2003). Thus, in these cascading models, individual differences in resolving developmental tasks may help to further explain how and why children's concerns about emotional security increase children's disruptive behavior problems (Davies & Cummings, 2006).

In spite of the plausibility of this cascade model, the viability of emotional security as a primary architect of this unfolding developmental cascade can be challenged by a broader, multi-faceted consideration of children's psychological attributes. Within the developmental psychopathology literature, two models have been proposed as pathways that may complement or potentially supersede the cascade proposed in EST. As a first complementary developmental cascade (see Path 2 of Figure 1), the "adjustment erosion" hypothesis proposes that early emerging behavior problems serve as an ultimate risk factor for subsequent increases in child behavior problems by undermining their ability to master developmental challenges (Moilanen, Shaw, & Maxwell, 2010). Therefore, in the first link in the transactional chain, early behavior problems may heighten child susceptibility to later difficulties with stage-salient tasks. Reflecting the second component of the transactional process, greater coping difficulties with stage-salient tasks may feedback to intensify child problems. Studies, to our knowledge, have yet to examine these hypotheses in early childhood, but there is some, albeit inconsistent, evidence to support the plausibility of the adjustment erosion model in later childhood and adolescence. For example, Burt and Roisman (2010) reported that children's academic competence in first grade, a key developmental task during the early school years, served as an intermediary mechanism in links between children's externalizing problems prior to kindergarten and their internalizing and externalizing problems in 3rd grade. Conversely, other studies have failed to identify childhood behavior problems in the preschool or childhood years as predictors of later difficulties in the mastery of stage-salient tasks (e.g., Bornstein, Hahn, & Haynes, 2010; Burt, Obradovic, Long, & Masten, 2008).

As a second complementary developmental pathway (see Path 3 of Figure 1), the "temperamental vulnerability" hypothesis postulates that early, stable constitutional dispositions to experience distress are proposed to increase children's subsequent risk for psychopathology (Lengua, West, & Sandler, 1998; Nigg, 2006). Previous research has

consistently documented links between temperament indices of negative toddler emotionality and child psychological problems (Lemery, Essex, & Smider, 2002; Calkins, 2002; Eisenberg et al., 2009). Building on these prior studies, temperamental vulnerability models propose that the risk associated with high negative emotionality may first emerge in resolving stage-salient tasks in early childhood and, in the process, lay the groundwork for later psychological problems (Cole, Llera, & Pemberton, 2009; Shiner, 2009). Supporting the first link in this conceptualization, research has revealed that the disposition to experience distress in early childhood is associated with problems mastering stage-salient tasks such as emotion regulation (e.g., Santucci, Silk, Shaw, Gentzler, Fox, & Kovacs, 2008). In an analysis of the full mediational chain, negative temperamental emotionality during infancy predicted subsequent emotion dysregulation in the toddlerhood and preschool periods which, in turn, was associated with psychological problems during the school years (NICHD Early Child Care Research Network, 2004).

Although the mediational role of stage-salient tasks assumes center stage in the resource depletion component of EST, it is important to note that the theory does not deny the operation of the two complementary models. However, if these pathways are robust, they may supersede the hypothesized role of developmental task difficulties as an explanatory mechanism in models of child insecurity. By virtue of its association with the risk posed by children's temperamental distress and their psychological problems, it is possible that children's insecurity may be nothing more than a spurious factor in the prediction of children's stage-salient task functioning and subsequent behavior problems. To provide a more stringent analysis of the utility of the resource depletion model within EST, we tested children's difficulties mastering stage-salient tasks as an intermediary process while simultaneously examining the two complementary pathways. Further increasing methodological rigor, our multi-method, multi-informant study utilized a repeated measures, longitudinal design that allowed for an autoregressive analysis of the pathways among involving the resolution of developmental tasks, and their psychological problems. Controlling for prior values of the primary constructs within autoregressive analyses specifically allowed for more confident conclusions regarding change and directionality in tests of the cascades (Cole & Maxwell, 2003).

Finally, our decision to initially follow a sample of two year-old children over three annual measurement occasions was guided by studies supporting early childhood as a sensitive period for emergence of individual differences in children's insecurity in the interparental relationship and their mastery of developmental tasks. For example, toddler and preschool children are more likely than older children to experience fear and distress in response to conflict, to demonstrate low levels of perceived competence in coping, and to have limited ability to enlist coping strategies to regulate affect (Jouriles, Spiller, Stephens, McDonald, & Swank, 2000; Kitzmann, Gaylord, Holt, & Kenny, 2003). During this same developmental period, greater use of symbolism, verbal communication capacities, and new strategies for regulating emotion are theorized to underlie the emergence of stable individual differences in children's insecurity (Davies et al., 2006). In addition, theory and research support the notion that early experiences with the formidable array of stage-salient tasks in the early childhood years may leave indelible imprints on children's trajectories of psychological adjustment (e.g., Sroufe et al., 1999; Sroufe et al., 2005).

METHOD

Participants

Participants included 201 two-year-old children and their mothers in a moderately-sized metropolitan area in the Northeast. Due to our focus in understanding diversity in how children cope with significant developmental challenges, we implemented a two-step

recruitment procedure. In the first step, we recruited participants through agencies serving disadvantaged children and families, including Women, Infants, and Children and Temporary Assistance to Needy Families rosters from the Department of Human and Health Services, and the county family court system. In the second step, we administered the abbreviated version of the Physical Assault Subscale of the Conflict Tactics Scale 2 (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) to insure that roughly equal proportions of participating mothers experienced (a) no violence (i.e., 40%), (b) mild/moderate physical violence (i.e., 24%), and (c) severe physical violence (i.e., 36%) in the interpartner relationship. Additional inclusionary criteria consisted of: (a) the female caregiver is the biological mother; (b) the child participant is 27 months old (± 5 months) and has no serious developmental disabilities, and (c) the male partner had maintained regular contact with the mother and toddler over the past year.

At Wave 1, 73% of the male partners were the biological fathers of the children, with 36% co-residing with the primary caregiver and child. The relationship status characteristics of the adult couples were as follows: 53% in unmarried intimate relationships; 28% married; and 19% recently separated or divorced. Rates of relationship dissolution over year prior to the Wave 2 and 3 assessments were 28% and 21%, respectively. In addition, the percentage of mothers who reported becoming involved in a serious romantic relationship (i.e., regular date, live-in partner, fiancée, spouse) was 37% and 39% during the year leading up to Waves 2 and 3, respectively.

Median annual income for the family household was \$18,300 (US) per year and a substantial minority of mothers (30%) and their partners (24%) did not complete high school. Most families received public assistance (95%) and were impoverished according to the US Federal Poverty Guidelines (99.5%). Based on the Hollingshead Four Factor Index, the majority of families (77%) fell within the lower two social strata. The mean age of the children was 25.7 months ($SD = 1.69$). Although the children ranged in age from 22 to 31 months at Time 1, the vast majority (i.e., over 97%) were within a more narrow 23 to 29 month age range at the first wave of assessment. The sample consisted of 44% girls ($n = 92$) and 56% ($n = 109$) boys. The majority of participants were Black (56%), followed by smaller proportions who identified as White (23%), Latino (11%), Multi-Racial (7%), and “Other” (3%).

Due, in large part, to the residential transience of the families, our initial retention rate from Wave 1 to Wave 2 was 83%. With the extra time between Waves 1 and 3, we were able to locate and conduct visits with several families whose children aged out of eligibility at Wave 2. Therefore, over the course of the study, the cumulative retention rate from Wave 1 to 3 was 87%. Analysis of the missing data for the primary variables and covariates (*Median* = 8.5%, *Range* = 0 – 22%) indicated that data were missing completely at random (MCAR) using Little’s MCAR test (Little, 1988; Schlomer, Bauman, & Card, 2010). Because findings of this test indicated that the data were MCAR, $\chi^2 = 584.87$, $df = 557$, $p = .20$, missing data were estimated using full-information maximum likelihood (FIML) in Amos 18.0 to retain the full sample for primary analyses (Enders, 2001).

Procedures

Mothers and children visited the laboratory at a research center for multiple visits at each of three annual measurement occasions beginning when children were two years old. During the first wave, mothers completed survey measures of children’s temperament and participated in a semi-structured interview designed to assess children’s distress reactivity to conflict. At the first two time points, children engaged in a set of challenging problem-solving tasks designed to assess their success in resolving stage-salient tasks. Finally, based on their experiences with the children during their multiple, lengthy visits to the laboratory,

the two primary experimenters also completed questionnaire and q-sort assessments of child psychological problems at each measurement occasion. All research procedures were approved by the Institutional Review Board at the research site prior to conducting the study.

Measures

Children's temperamental distress—Maternal reports on the Discomfort and Anger/Frustration Subscales of the Child Behavior Questionnaire at Wave 1 were used as indicators of temperamental distress (CBQ; Rothbart, Ahadi, Hersey, & Fisher, 2001). The Anger/Frustration Subscale consists of thirteen items designed to assess children's negative affect in response to obstructed goals or activities (e.g., "Gets irritable about having to eat food s/he doesn't like"). Consisting of twelve items, the Discomfort Subscale indexes children's dispositions to experience negative affect in response to sensory (e.g., visual, auditory, tactile) stimuli (e.g., "Becomes quite uncomfortable when cold and/or wet," "Is likely to cry when even a little bit hurt"). Response alternatives for the CBQ items ranged from "Extremely untrue of your child" (1) to "Extremely true of your child" (7). Research supports the convergent and discriminant validity of the CBQ subscales (Putnam & Rothbart, 2006; Rothbart et al., 2001). Although the Fear and Sadness scales of the CBQ are commonly included as indicators of a higher-order negative affectivity construct, they were not used in the Wave 1 measurement battery of the study. Therefore, the Discomfort and Anger/Frustration subscales were utilized as indicators of a latent construct of temperamental distress in the primary analyses.

Because the CBQ was designed for use with three- to seven-year-old children, we conducted additional psychometric tests of validity with our two-year-old sample. First, we conducted an item-by-item comparison of the CBQ with the relatively new Early Child Behavior Questionnaire (Putnam, Gartstein, & Rothbart, 2006) designed to assess comparable subscales of Anger/Frustration and Discomfort with two-year-old children. In support of our initial evaluation of the developmental appropriateness of the CBQ for our sample, the CBQ and ECBQ subscales, the majority of the items on the questionnaires were identical or virtual identical in wording. Second, internal consistency coefficients for the Anger and Discomfort Subscales in the current sample were adequate (i.e., .76 and .62, respectively). Third, as a further validity check, the latent construct of temperamental distress comprised of the Frustration and Discomfort scales as manifest indicators was specified as the sole predictor of latent constructs of emotional security at Wave 1 and developmental task functioning and behavior problems at Waves 1 and 2. Supporting the validity of the CBQ in our sample, the results indicated that temperamental distress significantly predicted significantly poorer developmental task functioning at Time 1 and Time 2 (after controlling for Time 1 functioning), significantly greater experimenter reports of externalizing symptoms at Time 1, and marginally higher levels of children's insecurity at Time 1, with β s ranging from .20 to .43.

Children's insecurity in the interparental relationship—Mothers completed the Interparental Disagreement Interview (IDI) to assess children's distress responses to interparental conflict at Wave 1 (Davies, Marin, & Cicchetti, in press; Davies, Sturge-Apple, Cicchetti, Manning, & Zale, 2009). The IDI is a semi-structured, narrative interview with the mother that is designed to generate rich descriptions of children's behavioral signs of reactivity during and following common, intense conflicts between the parents. For example, maternal responses to one of the questions, "During these disagreements that [child] sees or hears, how does s/he respond?" is followed up with a further probe inquiry "What does [child] do or say during these disagreements?" If the mother indicates that the child does nothing, additional probes (e.g., "When you say that [child] does nothing, what

do you mean specifically?") are also utilized to further capture the child's response. Questions designed to further gauge children's emotional reactivity included: "How do you think [child] feels during these disagreements?;" "How [emotion] do you think [child] typically feels?;" and "How can you tell [child] feels [emotion]?" Audiovisual records of the mothers' descriptions of their children's behavioral reactions to interparental conflict were subsequently coded independently by a pair of judges to assess children's emotional insecurity in the interparental relationship. Because mothers frequently displayed gestures and faces to supplement their narrative descriptions of their children's reactions (e.g., "he has a timid look on his face and is sucking on his bottom lip...worry in his eyes;" "nervous, sits and stares, has finger or thumb in his mouth"), the video records of the interview provided valuable complementary information to the audio track in coding of children's responses.

Three indicators were specifically targeted in the coding system to assess a relatively comprehensive array of signs of children's emotional insecurity in the interparental relationship, including high levels of fear, distress, vigilance, and defensive-regulatory behaviors (e.g., proximity and comfort seeking, avoidance). First, judges coded for the presence (1) and absence (0) of behavioral dimensions of child distress reactions to interparental conflict based on maternal narrative accounts of children's behaviors in two separate intervals: during the disagreement and in the immediate aftermath of the disagreement. Specific dimensions of distress reactivity included: (a) fearful distress, defined as expressions and behaviors marked by fear, tension, or distress (e.g., rocking, freezing, curling into a ball), (b) crying, as reflected in visible tears or sobbing in response to disagreements, and (c) verbal concern, characterized by child verbal expressions of worry about the interparental interaction or the welfare of family members in response to the disagreements ("Are you okay?"), and (d) comfort seeking, as indicated by apparent attempts to secure verbal or physical support from one or both parents (e.g., proximity, making bids for contact, hugging). Ratings of the presence of each code were aggregated together across the conflict and post-conflict periods to generate a behavioral *tally* of distress reactivity to conflict.

Second, coders provided specific continuous *ratings* of children's fearful distress during the conflict based on the intensity, quality, and organization of the children's distressing expressions, postures, and verbalizations (e.g., freezing, tension, fidgeting, whimpering). The rating ranged from 0 (none = no indications of fear, worry, anxiety, distress, concern, or vigilance) to 6 (high = substantial problems controlling and regulating their distress and fear). Third, coders provided a broader, *molar* rating of children's blatant, unvarnished, and dysregulated expressions of arousing forms of emotional distress (e.g., crying, overt fear expressions, calls to mom, proximity seeking, running away, involvement) based on the overall quality and organization of the child's behavior both during and after the conflict. Ratings ranged from "not at all characteristic" (1 = none or minimal signs of arousing distress) to "highly characteristic" (5 = exhibits telltale signs of arousing distress). Intraclass correlation coefficients, reflecting agreement between the two raters on over 25% of the interviews, ranged from .85 to .92 for the three indicators. Support for the validity of the IDI codes is reflected in its associations with established measures of interparental discord, children's reactivity to conflict, and their psychological functioning (Davies et al., in press; Davies et al., 2009).

Mastery of stage-salient tasks—To assess their progress in resolving key developmental challenges, children participated in a series of increasingly difficult problem-solving challenges in the first two waves. Adapted from a well-established paradigm for assessing individual differences in children's resolution of stage-salient issues (Matas, Arend, & Sroufe, 1978; Sroufe, Egeland, & Kreutzer, 1990), the procedural battery

consisted of four tasks that were each five minutes in duration and designed to be difficult for the child to solve without the assistance of an adult. In Wave 1, the specific tasks included: (a) a puzzle, (b) a shape sorter task in which children must place plastic forms into holes corresponding to their shapes, (c) a large seesaw problem that requires the child to place a wooden block on one end in order to gain access to an attractive toy encased in a transparent box, and (d) a task in which the child must use a piece of balsa wood to retrieve a ball stuck in a plastic tube. For Wave 2, the tasks were tailored to be challenging for the more advanced developmental period of the preschoolers and included: (a) a more complicated puzzle, (b) a sorting task consisting of arranging shapes according to height, (c) a maze task, and (d) a problem that required children to place spools onto correct colors of thread. Mothers, who are available in the same room, were instructed to permit the child to work on the problem independently before providing any assistance they thought the child needed.

Coders rated the videotaped records of the entire session (i.e., the collective series of four tasks) along continuous rating scales originally developed by Matas and colleagues (1978) to assess children's success at three key tasks: emotion regulation, autonomy, and resourceful problem-solving. As the measure of *emotion regulation*, the Coping scale captured the degree to which children were able to tolerate and manage stress and frustration in the taxing problem-solving tasks. Ratings ranged from (1) extremely low (i.e., protracted and debilitating emotion dysregulation and disorganization) to (7) high coping (i.e., child remains organized and regulated in spite of great challenge). To assess *autonomy*, the six-point Dependency scale was reverse scored so that high levels (6) reflected autonomous and independent efforts to actively solve the problem that were only complemented by help-seeking during very formidable or insurmountable stages of problem-solving. In contrast, low levels of autonomy (1) were defined by extended and recurring bouts of dependency behaviors (e.g., clinginess, excessive need for reassurance). Finally, indexed by the five-point Resourcefulness scale, *problem-solving* ability was designed to assess children's ability to utilize both their internal and external resources in a way that is precisely and successfully tailored to the specific challenges of the tasks. Whereas no resourcefulness (0) was characterized by the absence of any goal-directed, resourceful activity (e.g., complete passivity, allowing parent to independently solve the problem), intense resourcefulness (4) was evidenced by the use of innovative approaches to solving the problem that use a wide range of resources and are flexible in the face of setbacks. Intraclass correlation coefficients, calculated to assess interrater reliability of two coders who independently rated over 20% of the video records at each wave ranged from .55 to .92 ($M = .80$).

Child behavior problems—The two primary experimenters who were responsible for keeping contact with the families, arranging transportation to our laboratory, and overseeing the activities and tasks during the visit completed Q-set and survey assessments at all three waves. Experimenters based their ratings on close observations of the children for approximately ten to twelve hours during each wave, encompassing multiple visits to our laboratory and, in most cases, transportation of families to and from the research center. To increase the validity of the observations, experimenters retained a written record of their observations of the children after each visit using a form organized around psychologically relevant dimensions (e.g., shyness, obedience/defiance, emotional expressiveness, physical activity).

Experimenter Q-set ratings were derived from the California Child Q-Set (CCQ- Block & Block, 1980). The CCQ requires raters to sort 100 descriptors of children's behaviors, personality characteristics, and psychological symptoms into nine different piles ranging from "extremely uncharacteristic" to "extremely characteristic." To assess children's behavior problems, we utilized expert ratings of prototypical attributes of a child exhibiting

externalizing symptoms from the previous establishment of the psychometric properties of the CCQ (Block, 2008). Consistent with prior research (Shields & Cicchetti, 1997), we selected ten Q-sort items for scale development that were, on average, rated in the two most extreme piles by the experts. Ratings of cards from the “extremely uncharacteristic” pile were reverse scored so that higher scores reflected greater tendencies to exhibit externalizing behavior problems (e.g., “Is aggressive (physically or verbally),” “Characteristically pushes and tries to stretch limits,” “Is obedient and compliant [reverse scored].”). The practice of eliminating the less salient cards in the middle piles of Q-sort is particularly effective in maximizing the discriminant validity of the resulting externalizing Q-scale (e.g., Eisenberg et al., 1996; Shields & Cicchetti, 1997). Internal consistency estimates of the two experimenter externalizing Q-set ratings ranged from .73 to .81 across the three measurement occasions.

Survey ratings of child problems were derived from experimenter reports on the Externalizing scale of the Caregiver-Teacher Report Form (C-TRF; Achenbach & Rescorla, 2006). The Externalizing scale consists of 34 items that comprehensively capture a wide range of aggressive, oppositional, and attention problems (Ages 1½–5; Achenbach, Dumenci, & Rescorla, 2003). Response alternatives range from “Not True” (0) to “Very or Often True” (2). Internal consistency estimates for the Externalizing Symptoms scale ranged from .90 to .95 for each experimenter across the three measurement occasions. Due to the significant empirical overlap in the Externalizing Symptoms scale between the two experimenters at each wave (r s ranged from .59 to .74), experimenter ratings were summed together to form a parsimonious index of children’s behavior problems at each wave. In conjunction with the two Q-sort ratings at each wave, this approach affords the development of stable, triangulated latent constructs without unnecessarily taxing the statistical model with additional parameter estimates.

Covariates—As noted in the description of participant characteristics, children evidenced some variability in their age at the first and second measurement occasions and exposure to relationship changes involving their mothers and intimate partners. Because these factors may alter the pattern of interrelations among the primary variables, we examined them as potential covariates in the analyses. Separate assessments of *children’s age* at Waves 1 and 2 were quantified in months. At each of the three measurement occasions, *interpartner relationship changes* were assessed by maternal reports of the annual frequency of their: (a) involvement in new serious romantic relationships (regular date, live-in partner, fiancée, spouse); (b) new cohabitation with a serious romantic partner (e.g., spouse, dating partner, fiancée), and (c) dissolutions or separations from romantic partners. Responses to each of the questions were quantified as: 0 = no occurrences; 1 = single occurrence; and 2 = two or more occurrences. Responses to the three questions across the three waves were summed together ($M = 3.86$; $SD = 3.66$; $Range = 0 - 17$).

RESULTS

Descriptive Analyses

Table 1 provides the means, standard deviations, and intercorrelations for the variables used in the primary analyses. Correlations among the indicators of each of the higher-order constructs were generally moderate to strong in magnitude (see bolded coefficients in Table 1). In support of our first link in the proposed mediational pathways, significant interrelations were evident among Wave 1 dimensions of children’s insecurity and their diminished success in resolving developmental tasks at Wave 2. Likewise, moderate correlations between Wave 2 resolution of developmental tasks and Wave 3 assessments of

children's behavior problems provided evidence for the viability of the second link in our mediational process model.

Primary Analyses

In light of the initial correlational support for the measurement and structural parts of our model, we proceeded to test the role of children's success in stage-salient tasks as a mediating mechanism in the pathway between children's insecurity and their disruptive behavior problems using the Amos 18.0 computer software package to conduct structural equation modeling (SEM). To provide a conservative test of the proposed prospective associations, we utilized an autoregressive approach in which: (a) children's insecurity at Wave 1 was specified as a predictor of Wave 2 developmental tasks after controlling for Wave 1 developmental task functioning, and (b) Wave 2 developmental task functioning was estimated as a predictor of Wave 3 child behavior problems controlling for Wave 2 behavior problems. As a more rigorous analysis of the distinctive nature of pathways between Wave 1 insecurity, Wave 2 success in stage-salient tasks, and Wave 3 behavioral problems, pathways hypothesized in the two complementary models (i.e., temperamental vulnerability and adjustment erosion) were also simultaneously estimated in the analysis. In accord with adjustment erosion model, we specifically tested whether behavior problems at Time 1 predicts children's greater difficulties with stage-salient tasks at Time 2 and, in the process, increases their behavior problems at Time 3. Within this single analytic model, tests of the temperamental vulnerability hypothesis required further estimation of the association between children's temperamental distress at Wave 1 and developmental task functioning at Wave 2. Increasing the rigor of the analyses, all other structural paths among constructs across contiguous waves were also estimated (e.g., Wave 1 temperamental distress and Wave 2 behavior problems). Finally, to account for method variance, analogous manifest indicators (e.g., TRF scores) of behavioral problems were permitted to correlate across contiguous waves (i.e., W1 to W2, W2 to W3).

The resulting model, which is depicted in Figure 2, provided a good representation of the data, $\chi^2(13, N = 201) = 228.30, p < .001$, RMSEA = .05, and χ^2/df ratio = 1.49, CFI = .95, and TLI = .94. In support of the measurement model, the standardized loadings of the manifest indicators onto their respective latent constructs were significant ($p < .001$) and moderate to high in magnitude (range .56 to .98). In support of the predictions from EST, inspection of the structural paths further indicated that children's insecurity at Wave 1 predicted difficulties in resolving stage-salient tasks at Wave 2 after controlling for Wave 1 stage-salient functioning, $\beta = -.18, p < .05$. Notably, this pathway was significant after specifying children's distressed temperament and behavior problems at Wave 1 as predictors. In accordance with the second link in our proposed mediational model, children's difficulties resolving stage-salient tasks at Wave 2 predicted subsequent increases in their behavior problems at Wave 3 even after specifying the autoregressive path for behavior problems, $\beta = -.23, p < .01$. As a more direct test of the role of stage-salient difficulties as an explanatory mechanism, we conducted bootstrapping tests with the PRODCLIN software program (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2008). The results indicated that mediational path involving children's insecurity, their stage-salient difficulties, and disruptive behavior problems were significantly different from 0, 95% CI = .03 to 1.12.

Support for the complementary models tested was more mixed. On the one hand, the findings supported the adjustment erosion model and its hypothesis that children's difficulties with developmental tasks mediate pathways between their behavioral problems at Wave 1 and Wave 3. Specifically, children's behavioral problems at Wave 1 predicted their increasing difficulties in resolving developmental tasks at Wave 2, $\beta = -.32, p < .01$. As we described previously, developmental task difficulties at Wave 2 were, in turn

associated with greater behavioral problems at Wave 3. Follow up tests of mediation using the PRODCLIN bootstrapping software program further indicated that Wave 2 developmental task functioning was a significant explanatory mechanism in the path between Wave 1 and Wave 3 behavior problems (Preacher & Hayes, 2008), 95% CI = .03 to .31. On the other hand, the results failed to support the temperamental vulnerability hypothesis due to the negligible relationship between children's temperamental distress at Wave 1 and their success with stage-salient tasks at Wave 2.

Stability of the Findings

As a further test of the stability of the findings, we examined whether the results of the primary model in Figure 2 were robust after inclusion of three key covariates: child age at Wave 1, child age at Wave 2, and maternal romantic *relationship changes* across the three annual assessments. The three covariates were simultaneously specified as predictors of developmental task functioning at Wave 2 and disruptive behavior problems at Waves 2 and 3. The results replicated the pattern of significant relationships reported in the primary analyses. Stage-salient task functioning at Time 2 was predicted by both their Time 1 emotional insecurity, $\beta = -.19, p < .05$, and their Time 1 behavior problems, $\beta = -.29, p < .05$. Stage-salient functioning at Time 2, in turn, predicted Time 3 behavior problems, $\beta = -.20, p < .05$. Follow up tests of mediation using the PRODCLIN bootstrapping software program indicated that Wave 2 developmental task functioning was a significant mediator in the paths between: (a) Wave 1 insecurity and Wave 3 behavior problems, 95% CI = .01 to .58; and (b) Wave 1 and Wave 3 behavior problems, 95% CI = .01 to .15 (Preacher & Hayes, 2008). None of the covariates explained significant variance in any of the endogenous variables in the model.

DISCUSSION

Little is known about how children's insecurity in the interparental relationship develops into broader patterns of psychological maladjustment. In providing a framework for addressing this question, emotional security theory (EST) proposes that children's distress and insecurity in response to interparental conflict increases their vulnerability to subsequent psychological problems by undermining, in part, their ability to successfully master developmental tasks (Davies et al., 2006). Offering a first foray into testing this hypothesis, we identified children's problems with the mastery of developmental tasks as a significant mediator in the pathway between their insecurity in the interparental relationship during toddlerhood and their disruptive behavioral problems in the late preschool years. Confidence in the unique role insecurity plays in the developmental cascade model was further bolstered by the inclusion of complementary risk factors in the analyses. Valid questions can be raised about whether insecurity in the interparental relationship is simply a manifestation of a broader pattern of early temperamental difficulties and behavior problems that serve as the primary etiological agent in increasing stage-salient difficulties. Thus, within this model, associations between insecurity and prospective difficulties with stage-salient tasks might be viewed as merely spurious artifacts of the toxic developmental impact of early temperamental negativity and behavior problems. However, running counter to this alternative explanation, the prospective association between insecurity and children's stage-salient difficulties was significant even while simultaneously examining temperamental distress and early behavioral problems as risk factors. In turn, struggles resolving developmental tasks remained a stable predictor of subsequent behavior problems even after taking into account prior experiences with disruptive behavior problems.

In further characterizing the first link in the cascade model proposed in EST, analyses revealed that signs of insecurity evidenced by heightened fearful distress reactions to interparental conflict at age two predicted increases in children's collective struggles with

developmental tasks of autonomy, emotion regulation, and resourceful problem-solving from age two to three. Two primary explanations may account for this finding and serve as blueprints for more precisely tracing the nature of unfolding developmental processes in future work. According to the resource depletion model (Baumeister et al., 2007), enactment of behavioral strategies in one domain of functioning may impair other subsequent domains of functioning by exhausting a shared pool of resources. Translated to EST (Davies & Woitach, 2008), one interpretation is that prolonged insecurity and vigilance may deplete the common reservoir of biopsychological resources, thereby undercutting children's capacity to direct essential resources toward resolving developmental tasks. Repeated bouts of insecurity may, over time, repeatedly encumber children's efforts to recruit and coordinate the cognitive, affective, regulatory, and motivational processes necessary to cumulatively progress in mastering stage-salient issues. Thus, in the face of the increasingly difficult sequence of problems in this study, children with high insecurity may progressively fall behind their secure peers in their capacity to tolerate frustration and remain engaged (emotion regulation), initiate independent, instrumental efforts to approach the problems (autonomy), and flexibly utilize available resources to successfully master the tasks (resourceful problem-solving).

As a complementary explanation, insecurity in the interparental relationship is theorized in EST to serve as an analog for processing and responding to subsequent challenging contexts (Davies et al., 2006). The distress and vigilance, originally rooted in difficulties preserving security in the interparental relationship, may specifically be enacted to interpret and cope with a wider range of challenging settings. Given the neurological limitations in processing and responding to multiple simultaneous stimuli (Botvinick, Braver, Barch, Carter, & Cohen, 2001; Rothbart & Posner, 2006; Schimmack 2005), prioritizing resources toward defending against potential threat is likely to conflict with other demands and, in the process, disrupt the ongoing attempts to organize self-regulatory acts necessary to master developmental tasks (Davies et al., 2006). If the proliferation of a wary, hypervigilant response pattern is an operative process underlying children's troubles with stage-salient tasks, then it should be manifest in particularly pronounced expressions of emotion dysregulation and apprehension in the problem-solving tasks. Supporting this hypothesis, the correlations in Table 1 reveal that the three indicators of insecurity at Time 1 evidenced significant associations with Time 2 assessments of emotion regulation and autonomy difficulties characterized by a high degree of emotional dependency on the mother. In contrast, the measures of insecurity at Time 1 did not evidence comparable associations with resourceful approaches to problem-solving.

In accord with the second hypothesized link of the cascade model in EST, collective difficulties mastering stage-salient tasks at age three prospectively predicted children's greater behavioral problems at age four even after controlling for their prior behavior problems. Empirical identification of this pathway is more broadly consistent with the organizational approach to identifying cascades in the developmental psychopathology literature (Cicchetti, 1993; Sroufe et al., 2005). According to this perspective, successful negotiation of developmental challenges guides children toward progressively more adaptive developmental trajectories, whereas failing to resolve these tasks directs children toward increasingly maladaptive courses of development that commonly eventuate in psychopathology. A primary assumption is that the prior difficulties with developmental tasks probabilistically increase children's risk for behavior problems because it undermines the skills necessary to successfully approach and cope with newly emerging challenges. In keeping with this perspective, it is plausible that the stage-salient difficulties characterized by low frustration tolerance, emotional disorganization, and use of inflexible, automatic strategies in the face of the difficult tasks paved the way for disruptive, antagonistic problems as developmental demands and perturbations continued to accrue into the

preschool years. Progressive deviation toward psychopathology may specifically emerge as children who are already experiencing failure must now contend with a novel array of socio-emotional (e.g., prosocial peer behavior, cooperation in day care and preschool settings) and cognitive (e.g., attention, effortful control, basic academic knowledge) skills required to transition into formal schooling (Bierman, Torres, Domitrovich, Welsh, & Gest, 2009).

Results of the primary analyses depicted in Figure 2 further revealed that insecurity at age two was negligibly related to subsequent changes in children's behavior problems over a one year period. Although this finding may appear to be at odds with the existing body of research, findings from a meta-analysis of the literature indicated signs of insecurity were weaker and more erratic predictors of child psychopathology in: (a) models predicting externalizing problems rather than internalizing problems, (b) studies that employed higher quality measurement batteries and methodological (longitudinal versus cross-sectional) designs, and (c) samples of children and preadolescents rather than adolescents (Rhoades, 2008). Reflecting a similar pattern of characteristics, the present study utilized a multi-method, multi-informant measurement battery within a longitudinal, autoregressive design that largely targeted the more easily observable externalizing symptoms of children during the toddler and preschool years. Although Rhoades (2008) postulated that individual differences in young children's reactions to interparental conflict may not yet evidence sufficient continuity to have a sustained impact on children's functioning, this interpretation does not appear to fully account for our results. For example, measures of children's insecurity in toddlerhood have evidenced moderate stability over a one year period (Davies, Martin, & Cicchetti, in press). Furthermore, insecurity was a significant predictor of children's later adjustment and adaptation when evaluated within the developmental context of resolving stage-salient tasks. Thus, our findings testify to the value of adopting a developmental framework in identifying the unfolding developmental legacy of children's early experiences with insecurity in the family (Sroufe et al., 2005).

Although analysis of complementary developmental cascades failed to identify temperamental distress as a risk factor as the temperamental vulnerability hypothesis proposes, the findings were consistent with the adjustment erosion hypothesis. More specifically, children's disruptive problems at age two predicted trouble resolving developmental tasks at age three which, in turn, were associated with subsequent increases in their behavioral problems at age four. These results correspond with previous empirical documentation of the transactional interplay between behavioral problems and troubles with stage-salient tasks in intensifying psychological maladjustment over time (e.g., Burt & Roisman, 2010; Masten et al., 2005). Thus, the early behavior problems may confer a double whammy by setting the stage for both maladaptation in developmental tasks and, ultimately, greater behavior problems. Framed from the adjustment erosion hypothesis, one explanation for these findings is that disruptive problems insidiously beget further externalizing symptoms by limiting children to cope with developmental challenges in narrow, rigid, and irritable ways.

Several limitations merit discussion in fully interpreting the results. At a measurement level, greater methodological rigor and precision may be achieved in future research with modifications in measurement of constructs. First, including other informants and methods may be particularly valuable in future efforts to replicate the findings. For example, parent reports may provide a valuable supplement, particularly in expanding assessments of child behavior problems beyond the laboratory purview of experimenters. It would also be useful to complement our ratings of maternal interview narratives of their children's reactivity to interparental conflict with measures derived from observational ratings or reports from other informants (e.g., fathers).

Second, our measures of child temperament focused on selective parameters of negative emotional reactivity and were designed for use with three- to seven-year-old children. Although tests of its psychometric properties support the developmental appropriateness of the CBQ in our sample of toddlers (see Measures section), expanding the measurement battery to include other dimensions of distress (e.g., fear, sadness) and replicating the results with temperament measures designed specifically for toddlers are important future directions. Third, given that mothers were available in the same room with the children during the stage-salient task procedures, our assessment cannot rule out the possibility that differences between children in their resolution of the developmental challenges are due, in part, to the parent-child relationship processes. Although offering mothers some latitude in assisting their children during parts of the task may have intended to more closely approximate children's actual experiences of negotiating developmental challenges largely within family contexts during toddlerhood (Sroufe et al., 1990), aims of increasing ecological validity may have resulted in a loss of precision in attributing child task functioning specifically to the children's aptitude and efforts. Finally, because different pathways among insecurity, stage-salient tasks, and child attributes may have distinct sequelae, expanding the scope of outcomes beyond our focus on children's externalizing symptoms is an important step for future research.

At a design and analysis level, our three-wave, autoregressive design offered methodological advantages over common approaches to studying children's coping with interparental conflict (Cole & Maxwell, 2003). However, the unavailability of repeated measures of variables at every time point precluded the use of a full panel design. As a consequence, the present results do not fully explicate all potential transactions among children's insecurity, developmental task functioning, and behavior problems. In addition, autoregressive analyses do not rule out the potential operation of other extraneous variables that may account for mediational pathways. Although the plausibility of third variable explanations is reduced by our inclusion of some possible covariates in the analyses (e.g., early psychological problems, temperament, family instability), it is still possible that other unmeasured factors may account for the findings (e.g., family conflict). Addressing a related theme, the modest to moderate magnitude of children's stage-salient functioning as an explanatory mechanism in our results underscores the importance of examining other potential explanatory underpinnings of insecurity. For example, EST proposes that the prolonged operation of the security system produces changes in neurobiological (e.g., HPA axis, sympathetic nervous system functioning), neuropsychological (e.g., working memory), and attention processes that ultimately undermine child mental health (Davies & Woitach, 2008). Finally, because our participants consisted of young children who collectively experienced higher levels of interparental aggression, frequent changes in family relationships, and socioeconomic impoverishment, additional studies with other samples of children are necessary to test the generalizability of our findings.

In conclusion, our study was designed to break new ground by tracing the developmental processes by which children's insecurity in the interparental relationship ultimately develops into broader patterns of disruptive behavior problems. Consistent with EST, the results indicated that: toddler insecurity in the interparental relationship predicted greater difficulties with stage-salient tasks over a one-year period and stage-salient difficulties, in turn, predicted their subsequent behavior problems one year later. In conjunction with prior research (Sroufe et al., 1990; Sroufe et al., 2005), our results highlight the significance of infusing a developmental framework into models of risk in order to better understand how early experiences with adversity compromise children's psychological adjustment in insidious and complex ways. Moreover, if our findings are replicated, then they may eventually provide the evidence-based foundation necessary to identify clinical targets and

treatment tools necessary to offset the pathogenic developmental processes set in motion by children's emotional insecurity in the interparental relationship.

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Figure 1.

Conceptual depiction of the cascade hypotheses within emotional security theory in the context of two prevailing developmental models. Path 1 denotes the mediational associations postulated in emotional security theory. Path 2 illustrates the developmental pathways outlined in the adjustment erosion hypothesis. Path 3 depicts the predictions derived from the temperamental vulnerability hypothesis.

Figure 2.

Structural equation model examining children's stage-salient task difficulties as an explanatory mechanism in the pathway between their insecurity in the interparental relationship and their behavioral problems. Parameter estimates for the structural paths are standardized path coefficients. ** $p < .01$; * $p < .05$.

Table 1
Means, Standard Deviations, and Intercorrelations Among the Primary Variables.

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Wave 1 Temperamental Distress																					
1. Frustration	60.35	11.94	--																		
2. Distress	49.62	10.46	.82*	--																	
Wave 1 Child Emotional Security in the Interparental Relationship																					
3. Tally	1.77	1.50	.07	.14	--																
4. Rating	1.85	1.87	.03	.11	.69*	--															
5. Molar	2.54	1.30	.05	.12	.65*	.48*	--														
Wave 1 Success in Stage-Salient Tasks																					
6. Emotion Reg.	3.75	1.46	-.13	-.04	-.05	.06	-.07	--													
7. Autonomy	3.45	1.11	-.10	-.02	-.14	.01	-.02	.66*	--												
8. Problem-Solve	1.90	0.78	.01	-.13	-.11	-.03	-.05	.38*	.36*	--											
Wave 2 Success in Stage-Salient Tasks																					
9. Emotion Reg.	3.66	1.30	-.15*	-.05	-.18*	-.11	-.07	.25*	.23*	.27*	--										
10. Autonomy	3.45	1.08	-.12	-.17*	-.28*	-.17*	-.20*	.18*	.21*	.20*	.63*	--									
11. Problem-Solve	1.78	0.85	-.10	-.05	-.06	-.01	-.02	.08	.11	.30*	.59*	.59*	--								
Wave 1 Behavior Problems																					
12. TRF	12.01	14.19	.15*	.12	.01	-.05	.00	-.18*	-.16*	.01	-.26*	-.19*	-.21*	--							
13. Exp.1 Q-sort	51.02	10.24	.21*	.14	-.04	-.06	.07	-.09	-.03	-.04	-.26*	-.11	-.22*	.65*	--						
14. Exp.2 Q-sort	52.34	10.51	.16*	.10	.08	-.01	.08	-.20*	-.12	-.03	-.31*	-.27*	-.36*	.59*	.58*	--					
Wave 2 Behavior Problems																					
15. TRF	13.81	16.48	.07	.05	.08	-.03	.06	-.14	-.03	-.22*	-.32*	-.13	-.19*	.46*	.40*	.32*	--				
16. Exp.1 Q-sort	52.37	12.94	.07	-.01	.02	.02	.03	-.03	.02	-.14	-.30*	-.08	-.16*	.41*	.49*	.32*	.69*	--			
17. Exp.2 Q-sort	51.81	10.21	.07	.05	.11	-.05	.14	-.14	-.05	-.16*	-.32*	-.17*	-.22*	.35*	.39*	.41*	.67*	.64*	--		
Wave 3 Behavior Problems																					
18. TRF	16.88	19.87	.08	.00	-.08	-.08	-.01	-.16*	.01	-.19*	-.29*	-.18*	-.26*	.30*	.27*	.21*	.49*	.43*	.39*	--	
19. Exp.1 Q-sort	52.46	10.70	.15	.04	-.02	.00	.01	-.07	-.02	-.13	-.34*	-.22*	-.32*	.29*	.36*	.37*	.49*	.52	.42*	.70*	--

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
20. Exp.2 Q-sort	53.08	10.38	.15*	.06	.00	-.02	.00	-.18*	-.10	-.11	-.37*	.26*	.33*	.24*	.32*	.30*	.38*	.41*	.42*	.68*	.68*

Note.

* $p < .05$.

Table 2

Error Variances and Disturbance Terms for the Primary Analytic Model.

Wave 1 Temperamental Distress	66.16
1. Frustration	75.67
2. Discomfort	75.10
Wave 1 Children's Emotional Insecurity in the Interparental Relationship	2.16
3. Tally	0.09
4. Rating	1.73
5. Molar	0.94
Wave 1 Success with Stage-Salient Tasks	1.45
6. Emotion Reg.	0.67
7. Autonomy	0.46
8. Problem-Solve	0.48
Wave2 Success with Stage-Salient Tasks	0.84
9. Emotion Reg.	0.54
10. Autonomy	0.46
11. Problem-Solve	0.34
Wave 1 Behavioral Problems	68.13
12. TRF	69.57
13. Exp.1 Q-sort	36.26
14. Exp.2 Q-sort	41.85
Wave 2 Behavioral Problems	115.73
15. TRF	77.69
16. Exp.1 Q-sort	52.25
17. Exp.2 Q-sort	41.85
Wave 3 Behavioral Problems	141.63
18. TRF	122.57
19. Exp.1 Q-sort	31.86
20. Exp.2 Q-sort	37.16