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Development, Reliability, and Validity of the Daily Telephone Discipline Interview

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The purpose of this study was to investigate the reliability and validity of a new discipline daily-report telephone inventory with mothers of conduct-problem children. The study also sought to investigate the relationship between parental disciplinary style and (a) parent psychological status, (b) stressors, and (c) child behavior problems and mother–child interactions. One hundred and twenty-two mothers of conduct-problem children (ages 3 to 7 years) completed personal adjustment and life stress measures, child behavior reports, and daily parent telephone discipline interviews (DDI). Mothers were also videotaped interacting with their children. Results revealed significant correlations between mothers' reports of depression and stress and DDI disciplinary strategies characterized as inflexible, inappropriate, and critical. In addition, mother reports of child deviance correlated with disciplinary strategies characterized as physically forceful, flexible, and inappropriate. Critical and forceful DDI disciplinary strategies correlated with direct observations of mother commands and deviant mother–child interactions. These promising results suggest that the DDI may be a low-cost, efficient way of getting reasonably accurate information about parent disciplinary approaches.

Key Words: discipline; assessment; conduct disorders; measure validation; telephone interview; parenting; mothers.

Approximately two-thirds of children referred to mental health agencies are diagnosed as having "conduct problems" (Robins, 1981). Specific criteria for this diagnosis have been developed; such children typically exhibit antisocial behaviors at abnormal rates (i.e., lying, stealing, fire setting, destructiveness, oppositional behaviors, and noncompliance to parental requests). Conduct-problem children are at increased risk for developing psychiatric

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disability as adults, and for juvenile delinquency, drug abuse, and crime (Robins, 1981). Consequently, delineating factors that contribute to the development of child conduct problems may assist in improving treatment effectiveness and eventually in preventing conduct problems.

Parental disciplinary styles have consistently been associated with children's social adjustment. For example, parental "authoritarian style," depicted as domineering control, lack of warmth, and failure to use reasoning when disciplining children, has been associated with children who have low self-esteem and low competence (Baumrind, 1971). However, many of the early studies concerning discipline relied on mother reports of their disciplinary practices with their children, reports that were usually aggregated over the previous year. Such data could be inaccurate due to the well-known problems of retrospective reports. In addition, it has been consistently documented that mothers' reports are associated with personal factors such as level of depression, marital distress, and life stress (e.g., Forehand & Brody, 1985; Webster–Stratton & Hammond, 1990; Webster–Stratton, 1988).

As a result of the potential biases and limitations of parent report data, investigators have used independent observations of parent and child behaviors in the home or laboratory as indicators of disciplinary style. This approach has led to some important findings concerning the development of behavior problems in children. For example, observed excesses in parental commands, criticisms, and coercive behaviors, poor monitoring of children, and a lack of positive reinforcement have been associated with more deviant children (Patterson, 1982; Patterson & Stouthamer–Loeber, 1984). However, direct observation studies also have limitations in their assessment of parental disciplinary style. For example, some of the parental discipline indices derived from direct observations were based on global ratings completed by observers after a home visit was completed. Rarely were specific behaviors such as the parents' use of reasoning, logical consequences, or withdrawal of privileges, included in observational assessments of discipline. In addition, global reports did not provide information about the consistency or appropriateness of a particular parental disciplinary approach relative to the specific type of child behavior problem (Patterson & Stouthamer–Loeber, 1984).

Another limitation of the usual direct observational approach to assessing discipline is that even for home observations involving as many as three or four 1-hour visits, observers have a limited opportunity to witness low base rate behaviors. Children are seldom observed wetting their pants, refusing to dress, lying, stealing, fighting with neighbors, or abusing animals during an isolated 1-hour observation. Likewise, parents are unlikely to be observed disciplining these behaviors. In addition, the range of parents' disciplinary behaviors may be restricted by the presence of observers.

Parents are rarely observed spanking their children, and are most likely censored by cultural norms in their use of physical punishment, criticisms, and screaming when observers are present. One final limitation of the direct observation approach to assessing discipline is that it is very time consuming, expensive, and somewhat burdensome to families, making this approach unlikely to be used by the average clinician as an assessment technique. Because of the problems in obtaining an accurate and reliable method for assessing parents' discipline, a great deal remains to be understood about the specific difficulties with discipline for families with conduct-problem children. Such knowledge could help further our understanding of the etiology of conduct problems.

In this study, we proposed an alternative approach to assessing parent disciplinary approaches with conduct problem children. Telephone interviewers called parents twice a week and asked whether any of 22 previously identified child misbehaviors had occurred in the previous 24 hours. If the misbehavior had occurred, a discipline interview was conducted, which involved asking parents specific questions about how they handled the child's behavior problem. This approach was a low-cost, nonburdensome method of gathering specific discipline information about a wide range of child misbehaviors. Because the mother reported on specific child misbehaviors she had noted over only the previous 24 hours, data should be less subject to forgetting or distortion than global report data based on the previous 6 months. In addition, we felt that mothers would be less reluctant to censor their disciplinary strategies when talking with an empathic interviewer than they would during home observations. Finally, collecting detailed information on parental responses to specific types of child behavior problems makes it possible to assess the appropriateness of a particular parenting response for a particular type of misbehavior (e.g., destructive behavior versus bedwetting).

The purpose of this study was twofold. First, we investigated the reliability and validity of a new, low-cost, discipline daily-report telephone inventory conducted with mothers of conduct-problem children. Second, we explored the relationships between mother reports of disciplinary style and mother personal adjustment, life stressors, and reports of child adjustment.

METHOD

Subjects

Subjects were recruited from a Parenting Clinic at a large university that had specialized programs for the treatment and evaluation of families with conduct-problem children. Criteria for study entry were the following: (a) the child was between 3 and 7 years old; (b) the child had no debilitat-

ing physical impairment, no significant intellectual deficit or history of psychosis, and was not receiving treatment; (c) the primary referral problem involved one or more child conduct problems that had been occurring for more than 6 months (e.g., noncompliance, social aggression, or oppositional behaviors); (d) parents rated their children as having a clinically significant number of behavior problems (i.e., more than two standard deviations above the mean) according to the Eyberg Child Behavior Inventory (ECBI; Eyberg & Ross, 1978). The study children were judged as developmentally and intellectually normal (based on a psychologist's clinical judgment and observations rather than formal testing).

Of the 122 multiproblem families who participated, 43% were self-referred and 57% were professionally referred. There were 87 boys and 35 girls (mean age 4 years, 9 months). The mean number of behavior problems according to the ECBI was 21.3 (SD = 6.2), indicating that the children were clearly aggressive in the clinic range (nonclinic mean 6.8, SD = 3.9). Of the 122 mothers, 80 were married and 42 were single parents. Family social class as determined by Hollingshead and Redlich's (1958) Two-Factor Index yielded a wide range of social class: Class V (n = 17), Class IV (n = 29), Class III (n = 38), Class II (n = 29), and Class I (n = 17). Yearly income ranged from welfare (n = 23) to less than $28,999 ($n$ = 36) to above $29,000 ($n$ = 63) (mean = $22,000). Of the mothers, 33.6% reported experience with spouse abuse and 14% prior involvement with Child Protective Services for Child Abuse.

Parent Perceptions of Child Adjustment

Child Behavior Checklist (CBCL). The Behavior Problem Scale of the CBCL (Achenbach & Edelbrock, 1983) consists of 118 items, each rated on a 0- to 2-point scale. The items constitute multiple behavior-problem scales derived separately for boys and girls in different age groups. The scales form two broad-based groupings in all sex/age groups: Externalizing Behavior (aggressive, antisocial, and undercontrolled) and Internalizing Behavior (fearful, inhibited, and overcontrolled). In our work with young conduct-problem children, we have found that parents report high rates of both internalizing and externalizing problems. Therefore, we chose to use the Total Behavior Problem Summary score because it summarizes a variety of behavioral problems and is equivalent for all age and sex groups. In addition, two social competence subscales, which encompass parents' reports of their children's participation and performance in social and school activities, were used in this study. Achenbach and Edelbrock (1983) reported that the CBCL discriminates clinic-referred from nonclinic children. They also reported intraclass correlations of .98 for interparent agreement and .84 for 1-week test–retest reliability.

Mother Personal Adjustment and Stressors

Parenting Stress Index (PSI). The PSI (Abidin, 1990) contains 126 items divided into two major domains reflecting stress in the parent–child relationship. The first domain represents child characteristics and includes six subscales that constitute the total child domain score: Adaptability, Acceptability, Demandingness, Mood, Distractibility and Activity, and Reinforcement. In general, children who score high (≥ 122) on this domain are not seen as a source of reinforcement for the parent and, in fact, parents may feel rejected by the child. The second domain represents parent characteristics and includes seven subscales that constitute the total parent domain score: Depression, Attachment, Restricted Role, Competence, Isolation, Spouse Support, and Health. In general, parents who score high (≥ 153) on this domain report stress related to parental functioning. In addition, a third Life Stress scale provides an index of the amount of stress outside of the parent–child relationship such as death of a relative or loss of a job. Abidin (1983) reported acceptable content, concurrent, and construct validity evidence for the PSI. Alpha reliability coefficients were reported to be .95, and test–retest reliabilities ranged from .82 to .71.

Beck Depression Inventory (BDI). The BDI (Beck, 1972) consists of 21 categories of symptoms and attitudes describing behavioral manifestations of depression. Statements are ranked from 0 to 3 to indicate severity of symptoms. The BDI correlates significantly with clinicians' ratings of depression and with objective behavioral measures of depression. Split–half reliability tests have achieved a Spearman–Brown reliability coefficient of .93. The BDI continues to be regarded as one of the best self-report measures of general depressive symptoms.

Dyadic Adjustment Scale (DAS). The DAS (Spanier, 1976) is a self-report measure that assesses marital satisfaction. It consists of 32 items and has been found to be reliable across time and settings and to discriminate reliably between distressed and nondistressed couples (Spanier, 1976).

State–Trait Anxiety Inventory (STAI). The STAI (Spielberger, Gorsuch, & Lashene, 1970) measures the extent of the person's transitory ("state") and ongoing ("trait") anxiety. It consists of 22 statements describing how respondents feel now and generally. Respondents rate their feelings on a 4-point scale. In this study, the state score was used to indicate the respondent's current anxiety state. Alpha coefficients for internal consistency ranged from .83 to .92; scores correlate .52 to .80 with other measures of anxiety.

Spouse abuse and child abuse. Mothers were interviewed and asked detailed information about their prior experience with spouse abuse, "Have

you ever been physically abused?" They were also questioned about their prior experiences with Child Protective Services (CPS) resulting from reports of child abuse. Any response that indicated any experience with CPS or with physical abuse was coded as a yes response.

Observations of Mother–Child Interactions

Observations of the mothers and children were conducted in a clinic playroom equipped with a see-through mirror, remote control video equipment, and a large assortment of toys. There were two sets of observations in the clinic, with varying amounts of structure imposed. For the mildly structured clinic observation, called Child-Directed Interaction (CDI), the mother was instructed: "It's [child's name] turn to play. Let him/her choose whatever he/she wants to play with. You just follow his/her lead and play along with him/her." For the highly structured clinic observation, called Parent-Directed Interaction (PDI), the mother was instructed: "Now it's your turn. Choose whatever you want to play with and have [child's name] play with you." Each set of observations lasted 5 minutes (see Robinson & Eyberg, 1981).

The Dyadic Parent–Child Interaction Coding System – Revised (DPICS–R) (Robinson & Eyberg, 1981; Webster–Stratton, 1984) was used to analyze each videotape of the mother–child play interactions in the clinic playroom. The DPICS–R consists of 29 behavior categories that are coded each time they occur in a 5-minute segment. From the mother behavior categories, four separate summary variables were formed: (a) total commands, (b) total critical statements, (c) total physical negative behaviors, and (d) total praise. For the target child, there was one variable, total deviance and noncompliance. These summary behaviors were totaled for the 10 minutes of CDI and PDI laboratory observations. They are fairly accurate discriminators of clinic versus nonclinic families (Patterson, 1982; Webster–Stratton, 1985b).

Analyses of the videotaped observations were made by eight trained coders who were blind to the hypotheses of the study. Initially, the coders received extensive training and were required to maintain 80% reliability with practice tapes before analyzing study families' videotapes. It took approximately 4 to 6 months for observers to become reliable. To maintain accuracy, coders had weekly training sessions and practiced on standard videotaped interactions. To assess interobserver agreement, a second coder coded at least 40% of all observations. Interobserver agreement was calculated in two ways: by the ratio of agreements to total number of agreements and disagreements and by Pearson product–moment correlations between coders for each individual behavior dimension. Percent agreement was calculated for each 5-minute segment and was based only on occurrences. Mean overall interobserver agreement was 79% (range = 71% to 89%), and

the product–moment correlations between observers were .97 for total commands and praise, .96 for critical statements, .86 for physical negative behaviors, and .95 for total deviance.

Parent Daily Telephone Reports (PDR)

The PDR was developed by Chamberlain and Reid (Chamberlain, 1977; Chamberlain & Reid, 1987). We used the version that listed 22 negative behavior patterns commonly engaged in by children. Mothers were asked to select those negative and aggressive items they felt were major problems with their children. These shorter, individually tailored checklists were then used as the basis for the phone calls conducted twice a week for 2 weeks. During phone calls the checklist was read to the mothers, who were then asked to report on the occurrence or nonoccurrence of specific behavioral items during the previous 24 hours. All telephone calls were made by the same interviewer for each family. Previous studies have reported test–retest reliability of the PDR from .62 to .82.

DEVELOPMENT AND DESCRIPTION OF PARENT DAILY TELEPHONE DISCIPLINE INTERVIEW (DDI)

The DDI was developed for this study. When the mother responded on the daily PDR that a particular behavior problem occurred, then the interviewer asked the open–ended question "How did you handle this problem?" The interviewer was empathic, reflective, and encouraged the mother to elaborate on her description of her disciplinary strategy; however, she did not direct the parent's responses. The verbal responses given by the mothers were written down verbatim. The DDI took on the average half an hour to complete and was conducted on two occasions with a 1-week interval between calls. Subsequently, the two authors of the DDI (Webster–Stratton & Spitzer, 1989) did extensive content analyses of 56 interview responses from 28 mothers (randomly selected from over 300 interviews with 150 mothers) until they inductively derived the initial 66 codes that captured the essence of all the types of disciplinary responses that occurred. Then they each independently coded the disciplinary responses from the remaining 122 mothers until they achieved an overall interrater reliability of 80% across all 66 categories of responses. Finally, a third rater received extensive training with the DDI coding manual (lasting 8 hours) and independently coded 20% of all the interviews with the 122 mothers (244 interviews). These interviews were randomly selected without the primary coders' knowledge of which interviews would be selected for reliability checks. Finally, when disagreement occurred for infrequently occur-

ring strategies, interviews were rescored accurately before data were analyzed (rescoring occurred after interrater agreement was calculated).

The 66 disciplinary response codes were sorted and compiled into six categories based on the theoretical judgment of three psychologists and based on results of a prior study in which we examined the discipline differences between an abusive and nonabusive population (Webster–Stratton, 1985a, 1985b). The items placed in each category were mutually exclusive, except for two items: item #10, *argue and fight*, was included in both the physical force and critical verbal force categories, and item #43, *remind*, was included in both the teaching and guilt induction categories.

1. *Physical force* includes negative physical responses such as spank, slap, hit, kick, drag, restrain, push, and soap in mouth.
2. *Critical verbal force* includes responses such as yell, scold, scream, argue, threaten, reject, confront, or disapprove of child.
3. *Limit setting* includes time-out, withdrawal of privileges, logical consequences, distraction, or separation of children.
4. *Teaching* includes reasoning, explanations, giving alternatives, reminding the child, getting more information, praise, giving attention and assistance, reassurance, and material rewards.
5. *Empathy* includes responses that indicated the parent identified with and responded warmly to the child's feelings.
6. *Guilt induction* includes responses such as humiliation, threats to tell father, expression of disappointment with child, and reminding child of his mistake.

First, all 66 codes of responses were sorted into the six categories. Then internal consistency of the categories was computed and categories were refined by deleting items with low item–total correlations (less than .10) or items that occurred in fewer than 10 cases, leaving 43 coded items.

Two additional scores were developed. One, called *flexibility* of the responses, was computed based on the number of different responses used from each of the above six categories, with a possible range of 0 to 6. For example, an inflexible parent was one whose responses were restricted to one or two categories (e.g., critical) and a flexible parent used responses from many categories. The second score was called *inappropriateness of disciplinary strategy*. The child behaviors from the PDR were categorized in five groups: destructive (abused animals, kicked, hit, bit), noncompliant (defiant, resisted discipline), verbally abusive (argued, yelled, cried, tantrumed), developmental (wetting, soiling, hyperactive, fearful), and covert (lying, stealing). It was theoretically predetermined by the authors based on their knowledge of social learning principles which mother disciplinary strategies were appropriate or inappropriate according to the types of misbehavior. For example, it was not considered appropriate for a mother

to ignore destructive or covert child misbehaviors or noncompliance, but it was considered appropriate to ignore whining, smart talk, and tantruming behaviors. It was not considered appropriate to give Time Out for behaviors such as refusal to eat or bed wetting or night fears, but it was considered appropriate to use Time Out for noncompliance to a mother's request. In a final example, it was not considered appropriate to respond to child destructive behaviors with humiliation, threats of abandonment, or spanking, but it was appropriate to use time out, loss of privileges, or work details. Thus, each disciplinary response was coded as inappropriate or appropriate for each type of child misbehavior. Each mother then had a score based on the ratio of the number of inappropriate disciplinary strategies that occurred to the number of behavior problems.

RESULTS

The means, standard deviations, and range for the DDI variables are summarized in Table 1. As can be noted, the mean number of PDR daily problems discussed in the interview was 11.62 (SD = 5.36, range 1–31) which is clearly in the clinic range for this measure. Chamberlain and Reid (1987) reported a mean PDR score of 4.82 for a clinic population of older children. Because DDI raw scores were confounded with the number of child behavior problems that occurred that day, we computed both a total number of strategies used and the ratio of strategies to number of behavior problems. We used the ratio scores in the analyses, and these are presented in Table 1.

The results are presented in three sections: First, the DDI reliability (i.e., interrater, test–retest reliability, and internal consistency); second, concurrent validity data; third, relationships between DDI and mothers' personal adjustment and stressors and mothers' reports of child adjustment.

Reliability

Interrater stability. After calls were scored independently by each of the authors, 25 of the DDI calls (20%) were independently scored by a third rater. The Pearson product–moment correlations between raters for each category was .94 for physical force, .94 for critical verbal force, .97 for limit setting, .83 for teaching, .40 for empathy, .56 for guilt induction, .79 for flexibility, and .89 for inappropriateness. The mean percent agreement reliability based on ratio of agreements to total number of agreements and disagreements was 80% (ranged from 60% for teaching to 88% for limit setting and physical force).

Test–retest reliability. The DDI was conducted twice for each mother, with 1 week between calls. The correlations between call one and call two for

TABLE 1
Means, Standard Deviations, Range, and Proportion Scores for DDI Disciplinary Strategies

	Absolute Frequency									Relative to Number of Child Problems		
	Call 1			Call 2			Total					
	Mean	*SD*	Range	Mean	*SD*	Range	Mean	*SD*	Range	Mean	*SD*	Range
Number of daily behavior problems	5.88	2.99	1 – 16	5.73	2.88	0 – 15	11.61	5.47	1 – 31	—	—	—
Number of daily disciplinary strategies	9.45	5.75	1 – 25	9.12	5.65	0 – 26	18.57	10.42	2 – 47	1.57	0.39	1 – 2.83
Physical force	.68	1.25	0 – 6	.71	1.35	0 – 8	1.39	2.22	0 – 12	0.11	0.14	0 – 0.52
Critical verbal force	1.15	1.71	0 – 9	.98	1.43	0 – 8	2.14	2.81	0 – 14	0.16	0.19	0 – 1.17
Guilt induction	.49	1.01	0 – 6	.57	1.12	0 – 7	1.06	1.89	0 – 13	0.10	0.18	0 – 1.00
Limit setting	2.32	2.22	0 – 10	2.38	2.22	0 – 11	4.70	3.75	0 – 18	0.39	0.23	0 – 1.00
Teaching	1.95	2.11	0 – 9	1.76	1.91	0 – 10	3.71	3.49	0 – 19	0.32	0.26	0 – 1.00
Empathy	.06	.30	0 – 2	.09	.51	0 – 5	0.15	0.76	0 – 7	0.01	0.07	0 – 0.58
Inappropriateness	4.32	3.38	0 – 17	4.00	3.60	0 – 17	8.56	6.28	0 – 31	0.69	0.33	0 – 1.83
Flexibility	2.68	1.20	0 – 5	2.67	1.37	0 – 6	3.44	1.24	0 – 6	0.35	0.23	0 – 2.00

Note. DDI based on two interviews with 122 mothers.

all 122 mothers revealed a modest degree of temporal stability ranging from $r = .45$ for the physical force category to .75 for empathy. One would not expect correlations to be much higher than this, given the fact that mothers may observe different children's behaviors on these two days, thus resulting in somewhat different disciplinary responses.

Internal consistency. Split–half reliability coefficients (stepped up using the Spearman–Brown formula) for the six categories ranged from .59 for limit setting to .86 for empathy, indicating moderate internal consistency. Table 2 provides a summary of the reliability scores for each of the DDI categories.

Construct Validity

The means and standard deviations for the mother report data (averaged over the two DDI administrations conducted one week apart) and for the independent laboratory observations of mother–child interactions are shown in Table 3.

DDI variables and mother reports of child adjustment. Table 4 shows the correlations between the PDR and the eight categories of the DDI and the mothers' reports on the CBCL and PSI. Pearson Product–Moment Correlation coefficients were computed to examine the relationships between the following variables:

TABLE 2
Reliability of Mother Daily Disciplinary Interview (DDI)

Category	Number of Items	Interrater Reliability Correlations (*r*)	Percent Interrater Agreement	Test–retest Reliability	Internal Consistency
Physical Force	6	.94	88	.45	.62
Critical Verbal Force	10	.94	71	.59	.74
Guilt Induction[a]	6	.56	65	.60	.75
Limit Setting	6	.97	88	.43	.59
Teaching	10	.83	60	.51	.67
Empathy[a]	3	.40	72	.74	.86
Inappropriateness	1 – 66	.89	70	.62	.77
Flexibility	1 – 6	.79	78	.58	.70

Note. $N = 122$ mothers.
[a]For these infrequently occurring categories, disagreements resulted in interviews being rescored before data were analyzed.

TABLE 3
Means and Standard Deviations for Mother Perceptions of Child Adjustment, Mother Personal Adjustment and Stressors, and Mother–Child Observations

Variable	Mean	*SD*
Mother Perceptions of Child		
PSI Child Domain	136.68	17.29
CBCL Total Problem Score	66.56	9.60
CBCL Social Competence	36.33	11.92
Mother Personal Adjustment		
PSI Parent Domain	146.13	25.92
PSI Life Stress	11.95	10.57
Beck Depression Inventory	8.80	7.14
Dyadic Adjustment Scale	101.15	19.51
State–Trait Anxiety Scale	38.12	10.76
Mother–Child Interactions		
Commands	31.37	20.83
Praise	4.20	4.00
Critical Statements	16.14	12.64
Physical negative	.93	1.27
Total child deviance	39.14	28.30

Note. $N = 122$ mothers.

1. DDI variables and Mother Reports of Child Adjustment.
2. DDI variables and Mother Personal Adjustment.
3. DDI variables and Mother–Child Behavior Variables.

Because of the number of correlations, only p values of less than .01 were considered significant. These results indicated that, in general, mothers' reports of children as more deviant, stressful, and low in social competence are correlated with mother reports of discipline characterized by excessive physical force and strategies that are inappropriate for the type of child behavior problem and inflexible (i.e., restricted to one or two categories). In addition, mother reports of high social competence in their children were positively correlated with high empathy on the DDI. The correlation of .42 and .50 between number of problems on the PDR and the PSI Child Domain and CBCL Total Problem Score also suggests that the daily observations of behavior problems by mothers correlate moderately with the more global ratings on the PSI and CBCL.

DDI variables and mothers' personal adjustment and stressors. The correlations between the eight DDI scores and various dimensions of mothers' psychological status are shown in Table 5. There were significant correlations between more critical, inappropriate, and inflexible disciplinary approaches on the DDI and mother reports of either depression, anxiety, or stress. In addition, critical disciplinary approaches on the DDI were correlated with increased reports of family contact with Child Protective

TABLE 4
Correlations of DDI Disciplinary Strategies With Mother Perceptions of Children's Behaviors

			DDI Variables							
	Number of PDR Problems	Number of Strategies	Physical Force	Critical Verbal Force	Guilt Induction	Limit Setting	Teaching	Empathy	Inappropriate-ness	Flexibility
Mother:										
PSI Child Domain	.42***	.40***	.23**	.17*	–.07	–.04	–.01	–.11	.28**	–.24**
CBCL Total Score	.50***	.45***	.23**	.17*	–.07	–.03	.01	–.08	.24**	–.25**
CBCL Social Competence	–.28***	–.22**	–.02	–.19	.05	.01	.02	.29***	–.16*	.19

**$p < .01$, ***$p < .001$.

TABLE 5
Correlations Between DDI Disciplinary Strategies and Mothers' Personal Adjustment and Life Stressors

			DDI Variables							
	Number of PDR Problems	Number of Strategies	Physical Force	Critical Verbal Force	Guilt Induction	Limit Setting	Teaching	Empathy	Inappropriate-ness	Flexi-bility
BDI	.29***	.24***	.03	.16*	–.01	–.15	–.08	–.09	.22**	–.11
MAT	–.14	–.08	.11	–.10	–.05	.05	–.01	.04	–.07	.08
STAI	.29***	.27***	.03	.25**	.19*	–.16*	–.05	–.11	.25**	.02
PSI Parent Domain	.35***	.30***	–.02	.14	.02	–.04	–.05	–.04	.13	–.22**
PSI Life Stress	.18	.07	.04	.06	.11	–.17*	.03	–.07	.04	.01
Spouse Abuse	.26**	.18*	.04	.04	.09	–.11	–.02	–.06	.12	–.07
Child Abuse	.11	.08	.17	.25**	–.01	–.07	–.01	–.06	.14	.07

Note. N = 122 mothers. BDI = Beck Depression Inventory; DAS = Dyadic Marital Adjustment Scale; STAI = State–Trait Anxiety Inventory; PSI = Parenting Stress Inventory;
DDI Variables based on ratio of responses to number of behavior problems.
*$p < .05$; **$p < .01$; ***$p < .001$.

Services for child abuse. The total number of PDR problems and number of strategies was also significantly correlated with mother reports of depression, anxiety, stress, and spouse abuse. In general, the results suggest that mothers' disciplinary approaches are low to moderately related to mothers' personal adjustment variables.

DDI variables and laboratory observations of mother–child interactions. The correlations between telephone DDI variables and observed mother–child behavioral interactions in the laboratory are shown in Table 6. Mother DDI reports of discipline characterized as critical and forceful correlated significantly with laboratory observations of mother commands. There were also correlations between discipline characterized as using guilt induction and flexibility among categories and observations of mother praises with their children.

For children, there was a significant correlation between DDI disciplinary strategies characterized as high in limit setting and laboratory observations of increased total child deviance when interacting with mothers.

DDI variables and child's sex, age, and family's social position. No significant correlations were revealed between the family's social position score and the child's age and sex and each of the DDI categories. These data suggest that the DDI is not influenced by these factors and supports the discriminant validity of the measure.

DISCUSSION

A primary purpose of this study was to investigate the reliability and validity of the DDI, a new low-cost discipline daily-report telephone inventory. Preliminary results of this study suggest that the DDI can be reliably used by telephone interviewers after training. Results of the test–retest reliability analyses suggest that two calls provide fairly stable reports of parent disciplinary strategies. Internal consistency of the DDI categories suggests moderate correlations within the six discipline categories.

The second general finding was that mother disciplinary strategies showed low but significant correlations with mothers' personal adjustment. The more stressed or depressed mothers reported using more critical verbal force and more inappropriate disciplinary strategies, and they were more inflexible in their approaches to their children's behavior problems. It has been well-documented that parent perceptions of children's adjustment are related to their own psychological status (Forehand & Brody, 1985; Webster–Stratton, 1988). So too, it appears, are their daily reports of disciplinary strategies. It could be hypothesized that increased mother stress level or depression contributes to the mothers' increased rigidity or inappropriate use of disciplinary strategies.

TABLE 6
Correlations of DDI Disciplinary Strategies With Laboratory Observations of Mother–Child Interactions

Observations	Number of PDR Problems	Number of Strategies	DDI Variables: Physical Force	Critical Verbal Force	Guilt Induction	Limit Setting	Teaching	Empathy	Inappropriate Strategy	Flexibility
Child Deviance + Noncompliance	.28***	.27***	.11	–.05	.01	.21**	.06	–.08	.05	–.05
Mother Commands	.23**	.22**	.13	.20**	–.02	.06	.09	–.12	.14	–.07
Mother Praise	–.08	–.07	–.09	–.02	.23**	–.14	.16*	.02	–.02	.26**
Mother Criticals	.15*	.17*	.16*	.17*	–.13	.04	.15	–.08	.14	–.11
Mother Physical Negative	.12	.16*	.04	.04	–.10	–.01	.13	–.05	.15	–.06

Note. $N = 122$ mothers. DDI variables based on ratio of responses to number of behavior problems.
*$p < .05$; **$p < .01$; ***$p < .001$.

The findings showing low but significant correlations between mother reports of DDI disciplinary strategies such as critical force and independent observations of mothers' commands and criticisms when interacting with their children in the laboratory support the validity of the DDI, as do relationships between DDI flexibility and guilt induction and mother praises during interactions. The finding of a significant correlation between DDI disciplinary strategies (limit setting) and independent observations of child deviance also supports DDI validity. The fact that the DDI physical force category did not correlate with laboratory observations of physical negative behavior is not surprising because these were rarely observed. In addition, the correlations between DDI mother discipline characterized by physical force and reports of more aggressive children on the CBCL and PSI and between DDI empathy and child social competence support the DDI's construct validity.

The development of a sensitive measure of discipline is needed to understand more fully the discipline problems faced by families with conduct-problem children. Results suggest that, in general, mothers with conduct-problem children used frequent discipline characterized by multiple strategies (within a particular category), such as physical force strategies or verbal critical force strategies such as commands, threats, yells, and criticisms. These mothers did not lack knowledge of different disciplinary strategies but rather appeared to have problems knowing which strategy was appropriate to use for a particular behavior problem. Mothers may have ignored lying or destructive behaviors, while they may have yelled and spanked the child for whining and tantrums. One example of this type of inappropriate approach is one mother who said first she yelled, then she reasoned with her son, then she spanked him, and finally they prayed together. Unlike the "authoritarian" parents characterized by Baumrind (1971), these mothers reported a great deal of cajoling, reasoning, explaining, praising, and reminding as well as spanking, yelling, commands, and criticisms. What was clear from the DDI reports was that the mothers were indecisive and inflexible in choosing their disciplinary strategy and did not plan their intervention. Perhaps this somewhat chaotic disciplinary style is reflective of their overall poor problem-solving or coping ability.

It is also of interest to note that these data with young conduct-problem children differ somewhat from the research concerning parental disciplinary practices with conduct disordered adolescents. These studies suggest the opposite findings, that is, that parents of delinquents fail to monitor or discipline their children at all (Patterson & Stouthamer–Loeber, 1984). Perhaps parents of young conduct–problem children start out by using many disciplinary strategies and then gradually disengage as nothing seems to be effective.

There are several limitations to this study that deserve comment. In order to understand fully the validity of the DDI for assessing disciplinary,

it is necessary to study another sample of mothers with conduct-problem children. Replicating the study with another sample of mothers of conduct-problem children will assure that the DDI responses are generally applicable to conduct-problem children elsewhere. In addition, data from mothers with non-conduct-problem children is essential to establish the discriminative validity of the DDI. Future studies need to provide normative data for this instrument as well as additional empirical information about its psychometric characteristics and factor structure for normal families.

It should be noted also that the validity correlations we obtained were relatively modest and did not account for more than 10% of the variance. However, this is not surprising, since we were not actually correlating the DDI with direct measures of discipline, but rather with mother psychological status, stressors, and perceptions of behavior problems. Even the laboratory observations were not direct validity checks because the mothers were asked to play with their children but were not required to do any disciplining of child misbehaviors. In fact, these play sessions with novel toys, in a relatively nonstressful situation (away from siblings, telephones, and competing demands on mothers' attention) tend to promote more positive interactions. Thus, while we expected that the DDI would correlate with these measures, we did not expect it to produce high correlations because of the nature of the measures.

Future validity studies with the DDI should use other disciplinary measures and should perhaps "stage" a disciplinary confrontation between the parent and child to observe directly. Finally, it should be noted that some of the disciplinary categories did not occur very often, suggesting that it may be necessary to conduct more than two interviews to provide sufficient variability in the sample when assessing low-frequency categories.

Nonetheless, despite these limitations, this preliminary study is highly promising and provides support for the reliability and validity of the DDI with a clinic population of mothers of children ages 5 to 8 years. Because it is inexpensive, easy to administer, and fairly innocuous, the DDI may have utility for getting reasonably accurate information about parent disciplinary approaches without the expense of laboratory observations or home visits. It may also be useful for evaluating treatment effectiveness. In fact, in a recent study we found significant improvements in DDI scores for six of the eight variables following a parent training intervention for parents with conduct-problem children (Webster–Stratton, 1991). This could have important assessment ramifications for the clinician.

REFERENCES

Abidin, R. R. (1990). *Parenting stress index (PSI): Manual.* Charlottesville, VA: Pediatric Psychology Press.

Achenbach, T. M., & Edelbrock, C. S. (1983). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VT: University Associates in Psychiatry.

Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology Monographs*, **1**, 1–102.

Beck, A. T. (1972). Depression: Causes and treatments. Philadelphia: University of Pennsylvania Press.

Chamberlain, P. (1977). *Manual for parent daily report*. Unpublished manuscript.

Chamberlain, P., & Reid, J. B. (1987). Parent observation and report of child symptoms. *Behavioral Assessment*, **9**, 97–109.

Eyberg, S. M., & Ross, A. W. (1978). Assessment of child behavior problems: The validation of a new inventory. *Journal of Clinical Psychology*, **16**, 113–116.

Forehand, R., & Brody, G. (1985). The association between parental personal/marital adjustment and parent–child interactions in a clinic sample. *Behaviour Research and Therapy*, **23**, 211–212.

Hollingshead, H. B., & Redlich, F. C. (1958). *Social class and mental illness* (pp. 398–407). New York: Wiley.

Patterson, G. R. (1982). *Coercive family process*. Eugene, OR: Castalia.

Patterson, G. R., & Stouthamer–Loeber, M. (1984). The correlation of family management practices and delinquency. *Child Development*, **55**, 1299–1307.

Robins, L. N. (1981). Epidemiological approaches to natural history research: Antisocial disorders in children. *Journal of the American Academy of Child Psychiatry*, **20**, 566–680.

Robinson, E. A., & Eyberg, S. M. (1981). The dyadic parent–child interaction coding system: Standardization and validation. *Journal of Consulting and Clinical Psychology*, **49**, 245–250.

Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*, **38**, 15–28.

Spielberger, C. D., Gorsuch, R. L., & Lashene, R. E. (1970). *STAI: Manual for the State–Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.

Webster–Stratton, C. (1984). *Manual for parent–child interaction coding system – Revised*. Unpublished manuscript.

Webster–Stratton, C. (1985a). Comparison of abusive and nonabusive families with conduct-disordered children. *American Journal of Orthopsychiatry*, **55**(1), 59–69.

Webster–Stratton, C. (1985b). Mother perceptions and mother–child interactions: Comparison of a clinic-referred and a nonclinic group. *Journal of Clinical Child Psychology*, **14**, 334–339.

Webster–Stratton, C. (1988). Mothers' and fathers' perceptions of child deviance: Roles of parent and child behaviors and peer adjustment. *Journal of Consulting and Clinical Psychology*, **56**, 909–915.

Webster–Stratton, C. (1991). *Assessing post–treatment changes in discipline for families with conduct-disordered children*. Unpublished manuscript.

Webster–Stratton, C., & Hammond, M. (1990). Predictors of treatment outcome in parent training for families with conduct-problem children. *Behavior Therapy*, **21**, 319–337.

Webster–Stratton, C., & Spitzer, A. (1989). *Manual for coding parent discipline interview*. Unpublished manuscript.

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