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The Children's Firesetting Interview with Psychiatrically Referred and Nonreferred Children

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This study evaluated the Children's Firesetting Interview (CFI). The measure was developed to operationalize multiple domains of functioning derived from a risk-factor model of firesetting. The model poses that child, parent, and family characteristics promote firesetting and continuation of a pattern of firesetting. Major factors include curiosity about fire, involvement in and exposure to fire-related activities, and knowledge about first safety The CFI, consisting of 46 questions reflecting six a priori *dimensions, was administered to 519 children (ages 6–13) recruited from nonpatient, outpatient, and inpatient samples. Internal consistency and test-retest reliability of the measure were satisfactory. Criterion validity was supported by the findings that firesetters showed greater curiosity about fire, involvement in fire-related activities, exposure to models/materials, and knowledge about things that burn than did nonfiresetters. These findings did not vary as a function of the child's patient status or level of antisocial behavior. Implications for the evaluation of firesetting risk are discussed.*

From the perspective of both a rich clinical literature and a developing research base, multiple characteristics of juvenile firesetters have been identified (Kolko, 1989). In an initial effort to integrate clinical lore, theory, and research, we have proposed a preliminary risk model based on mental

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health and fire service literature (Kolko & Kazdin, 1986). The model identified a number of factors that may place children at risk for engaging in firesetting and for continuing a pattern of firesetting over time. Central factors within the model include such child, parent, and family characteristics or conditions as early experiences with fire, exposure to models or materials, limited fire safety skills, and poor supervision or monitoring of the child. Among the other, more general variables in the model are the child's involvement in covert antisocial behaviors, personal motives for the use of fire, and exposure to discipline and supervision. The model, the relation of constituent factors to each other, and how they may operate to promote firesetting have yet to be tested, owing in part to the absence of measures that assess critical domains.

Information about subjective states, cognitive processes, overt behavior, and related domains are included in the model. On the basis of research from other areas, it is felt that children and parents are likely to be differentially useful as informants within these different domains (e.g., Edelbrock, Costello, Dulcan, Conover, & Kalas, 1986). Parent and child reports often show relatively low correlations across a wide range of child behavioral and emotional problems (Achenbach, McConaughy, & Howell, 1987). Consequently, information obtained from separate sources may be complementary rather than redundant (see Achenbach & McConaughy, 1987).

In a previous study (Kolko & Kazdin, 1989), we reported the development of a parent-report interview to measure components of the firesetting risk factor model that are likely to fall within the purview of the parent. The measure, referred to as the Firesetting Risk Interview, encompasses such domains as the child's expressiveness, family influences, overt behavior, curiosity, and others. In a study of inpatient, outpatient, and nonpatient children using this measure, firesetters and nonfiresetters differed on several dimensions associated with fire-related activity, children's behavioral repertoires, and family influences in the predicted direction. Several related domains from the perspective of the child also require operationalization.

The present study reports on the development of the Children's Firesetting Interview (CFI). The measure was designed to operationalize several facets of the model and to encompass domains of functioning in which child self-report is likely to be critical. Extending the use and applicability of measures of firesetting risk factors to children may be particularly important because of the covert or concealed nature of firesetting and its correlates. For certain types of questions the child may be uniquely appropriate as the primary source of information.

The CFI samples a set of dimensions within the model that are likely to be clearly within the purview of child report. These dimensions include the child's firesetting interests, exposure, and skill repertoire. This study,

then, describes the scale development and psychometric properties of this child-report interview and examines its criterion validity by comparing firesetters and nonfiresetters on each dimension. Concurrent validity was studied by correlating portions of the interview with other related measures. A difficulty in research on firesetters has been the inclusion of select populations such as patient samples or samples of male subjects only. To evaluate the validity of the measure across child samples, firesetters and nonfiresetters in the present study included children from the community (nonreferred), as well as children from outpatient and inpatient clinics.

METHOD

Subjects and Samples

The subjects were 519 children (ages 6–13 yrs) recruited from three sources: (1) nonpatients in the public school system who had not received clinical services within the past year (n = 251), (2) outpatients in an outpatient psychiatric clinic for children and their families (n = 154), and (3) inpatients of an acute-care child psychiatric unit (n = 114). The mean age of all children was 9.4 years (range = 6–13, SD = 2.1). The overall sample included 343 males and 176 females. Of the total sample, 263 were white, 246 were black, 5 were biracial, and 5 could not be classified. The mean grade level in school was the fourth (SD = 2.0). Diagnoses were based on the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III; American Psychiatric Association, 1980) following semistructured clinical interviews with the child and parent conducted by a child psychiatrist and a subsequent treatment team conference at which these and other data were reviewed. Diagnoses were obtained for two-thirds of the outpatients and all of the inpatients. The most frequent diagnoses were conduct disorder (n = 58), attention-deficit disorder (n = 34), and oppositional disorder (n = 19).

In all, 169 children were in the custody of their biological parents, 267 and 9 children were respectively in the custody of their mothers or fathers only, and 74 children were in the custody of a nonparent figure (e.g., adoptive/foster, courts). The mean number of family members in the home was 3.7 (SD = 1.3). Family social class, calculated by the Hollingshead and Redlich two-factor index, was as follows: I (34.7%), II (29.7%), III (18.0%), IV (11.1%), V (6.5%). Of those families for whom welfare status data were available (n = 191), 50% received public assistance. Table I describes demographic characteristics of the sample as a function of firesetting (firesetters, nonfiresetters) and sample status (nonpatient, outpatient, inpatient).

Table I. Demographic Characteristics of the Overall and Individual Samples

	Firesetting Status				Sample status					
	Fire (n = 199)		No fire (n = 320)		Nonpatient (n = 251		Outpatient (n = 154)		Inpatient (n = 114)	
Characteristic	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Mean age (*SD*)[a]	9.4	2.2	9.5	2.0	9.2	2.0	9.5	2.2	9.8	2.0
Sex										
Male	151	75.9	192	60.0	151	60.2	101	65.6	91	79.8
Female	48	24.1	128	40.0	100	39.8	53	34.4	23	20.2
Race										
White	113	56.8	150	47.6	106	42.2	70	46.4	84	78.5
Black	83	41.7	163	51.7	140	55.8	80	53.0	23	21.5
Biracial	3	1.5	2	0.6	5	2.0	1	0.6	–	
Mean child grade[a]	3.9	2.1	4.1	2.0	3.9	1.9	4.2	2.2	4.1	2.2
Custody										
Both biological parents	57	29.7	112	35.8	102	41.3	39	25.5	28	26.7
Either biological parent	112	55.2	164	52.4	121	49.0	96	62.7	53	50.5
Adoptive/other	30	15.1	44	11.8	19	9.7	16	11.8	19	22.8
Mean family size[a]	3.9	1.4	3.6	1.3	3.9	1.3	3.6	1.3	3.4	1.4
Hollingstead 2-factor index										
I	69	38.8	97	32.2	67	28.2	54	36.2	45	48.9
II	48	27.0	94	31.2	71	29.8	51	34.2	20	21.7
III	28	15.7	58	19.3	51	21.4	22	14.8	13	14.1
IV	22	12.4	31	10.3	28	11.8	14	9.4	11	12.0
V	11	6.2	21	7.0	21	8.8	8	5.4	3	3.3
Median monthly income	500–1,000		1,000–1,500		1,000–1,500		500–1,000		500–1,000	
Public assistance	77	54.2	114	47.5	85	43.1	61	55.5	45	60.0
DSM-III diagnosis[b]										
N with diagnosis penultimate	–		–		–		83	63.3	73	100.0
N with conduct disorders							29	34.9	29	39.7

[a]Mean (standard deviation); valid percentages are reported owing to missing data.
[b]Diagnoses were obtained for the patient samples only.

The subjects were recruited over a 38-month period (see Kolko & Kazdin, 1989). Briefly, the nonpatients were recruited through a postcard mailing to 4,360 parents of children registered in the public schools. The outpatient and inpatient samples were recruited from these two respective clinical services at Western Psychiatric Institute and Clinic. An attempt was made to recruit all consecutive and available families who were made known to project staff. However, the large number of firesetters recruited in the study from all three samples may have been influenced by the fact that all parents were informed that the focus of the study was firesetting, among other "child behaviors." In this context, the percentages of child firesetters in these samples do not reflect true prevalence rates. All children and their parents provided written consent to participate, in accord with the university's psychosocial institutional review board.

Firesetting Status

The child's firesetting status was determined following a brief firesetting screening interview that was administered separately to the child and the parent (see Kolko & Kazdin, 1988). Although several questions were administered during the interview (e.g., child's interest in fire, frequency of matchplay), the child's status was based solely on whether or not the child had engaged in firesetting within the past year. Firesetting was defined as the child's involvement in burning or setting fire to property. A child was classified as a firesetter if *either* the child or the parent acknowledged firesetting behavior within the past year, based on information obtained from their separate interviews.

Firesetting included lighting papers and small objects, burning personal property, or setting fire to a residence or structure.[3] Nonfiresetters were so classified if *both* sources denied any firesetting within the past year. Children whose fireplay was limited to matchplay only (e.g., playing with candles, striking matches) were classified as nonfiresetters. Prior research examining the convergence between child and parent reports of the child's involvement in firesetting, based on separate interviews with each source, has shown agreement among outpatient (kappa = .85) and inpatient (kappa = .62) populations (Kolko & Kazdin, 1988).

[3]For descriptive purposes, it is worth mentioning that 27%, 35%, and 19% of the firesetters in the nonpatient, outpatient, and inpatient samples respectively, had set fires that were classified as serious because they damaged significant personal property and/or a residential structure.

Procedure and Design

In addition to the previously mentioned screening questions, children also completed three self-report measures: the CFI, Fire Safety Knowledge Questionnaire, and Interview for Antisocial Behavior. To clarify the different reponse formats of the CFI, the child was provided with index cards indicating the response choices and the corresponding numerical scale associated with each series of questions. The CFI took approximately 20 minutes to administer.

To assess test-retest reliability, 35 children (18 nonpatients and 17 patients) were contacted by phone 4 weeks after their initial assessment in order to respond to the CFI a second time. The CFI was then administered on the phone by a research assistant who was unaware of the outcome of the initial administration of this measure. During this administration, all response choices were reiterated to facilitate selection of the correct alternative.

Development of the CFI

Content and Scoring. The CFI is a child-administered interview for assessing several individual, peer, and family dimensions related to aspects of the firesetting risk model described earlier. An interview format was found necessary upon pilot-testing the measure since children required explanations of certain items, response choices, or scales, and special assistance in performing role-plays. The content of some questions was based on a previous questionnaire for assessing firesetting risk status (Federal Emergency Management Agency [FEMA], 1983). Questions examined the child's fire interest, knowledge, competence, experiences, involvement, and general exposure to supervision/discipline.

Initially, the measures consisted of 56 questions that reflected eight a priori dimensions. Fourteen items were stated along 5-point Likert scales reflecting the quantity of behavior (e.g., 1 = not at all, 3 = somewhat, 5 = very much), while 14 items on 5-point scales reflected specific categories of behavioral frequencies (e.g., 1 = none, 3 = two or three, 5 = seven or more) or qualitative aspects of severity (e.g., 1 = nothing, 3 = burn objects, 5 = burn people/buildings). Three role-play items were scored on the basis of the total number of correct responses provided. One question contained three response categories that were scored along a scale with a 5-point range (e.g., 1 = no permission to use matches, 3 = restricted use, 5 = unrestricted use). Finally, 24 items surveyed the child's knowledge of combustible materials in a dichotomous format (yes/no).

Thus, for many of these questions subjects reported an attribute or individual frequency that was later coded into one of five categories for ana-

Table II. Dimensions, Sample Items, and Item–Remainder Correlations of the CFI

Dimensions/item	*N* of items	Item–remainder Mean[a]	Item–remainder Range
Curiosity about fire How much do you want to play with fire? How special or magical is fire to you?	10	.38[b]	.30–.49
Involvement in fire-related activities How many times did you pull a fire alarm?	4	.28[b]	.17–.38
Knowledge about things that burn Will clothes, like a shirt or pair of pants, burn?	15	.35[b]	.08–.60
Fire competence What steps would you follow to light a fire in a fireplace?	8	.26[b]	.10–.44
Exposure to models/materials How many of your friends have you seen playing with matches or lighting fire?	6	.37[b]	.19–.57
Supervision/discipline How often are you disciplined at home?	3	.24[b]	.18–.28

[a]Mean based on *r*-to-*z* transformations and *df*s from 497 to 508.
[b]$p \leq .001$.

lytic purposes, with one exception. The coding of some items into individual categories was based on the distribution of the responses (e.g., "How many times did you leave burn marks on things in your home?"), or their relationship qualitatively to heightened interest in, or contact with, fire (e.g., "When you think about fire, what do you think about?"). For quantitative codes, the frequencies were divided into five or three categories that contained a comparable distribution of responses.

Item Selection. Based on the risk-factor model, six a priori dimensions were included. Item-remainder correlations were calculated for the items included in each individual dimension, and then each item was correlated with all of the other remaining scales in order to assess the homogeneity of the items that composed each a priori scale. As in construction of the measure for parents (Kolko & Kazdin, 1989), an item was retained on its original dimension if the correlation between an item and remainder of this scale exceeded the correlation between that item and any other scale. Overall, 42 (75%) of the 56 items remained on their original scales. The 4 items that were more highly correlated with another scale were added to those respective scales. Ten items were deleted, 9 of which were from the one dimension that contained dichotomous items (Knowledge).[4] Table II presents the indi-

[4]The 9 items were deleted from the Knowledge About Things That Burn dimension. For each of the following items, the child was asked whether the item would/would not burn if touched with a lighted match: plastic bag, rubber ball, plants, cardboard box, rugs, wall paint, spot remover, hair spray, and cooking oil/grease.

vidual dimensions and representative items, and their item–remainder correlations.

Additional Measures

The primary means of evaluating the CFI was through criterion validity in showing whether firesetters and nonfiresetters differed in predicted directions on the scales. The concurrent validity of the CFI could be demonstrated by showing that the measure correlates with other more established measures of firesetting dimensions. However, additional measures of firesetting experiences are not currently available. Two other measures were administered to validate selected scales of the CFI and to determine whether level of antisocial behavior, with which firesetting is sometimes correlated, can account for the results.

Fire Safety Knowledge Questionnaire. The Fire Safety Knowledge Questionnaire is a 23-item child self-report measure of knowledge of correct responses to several emergency fire situations (Jones, Kazdin, & Haney, 1981). The questionnaire was derived from situations, ranging in context, that were identified as important by local firefighters (e.g., "If your house is on fire, should you roll out of bed? If you smell smoke, should you crawl on the ground?"). With young nonreferred children, significant improvements have been documented on this measure following behavioral training in fire safety skills. In the present study, the questionnaire was administered to all children (M = 18.0, SD = 3.0; Alpha = .68) following completion of the CFI. This instrument was included because it has been developed as a measure of fire safety knowledge or skill, two of the dimensions in the CFI. Therefore, it was hypothesized that this measure would be correlated positively with the Knowledge About Things That Burn and Fire Competence dimensions of the CFI. It should be noted that the content of this questionnaire did not overlap with that of any of the CFI scales.

Interview for Antisocial Behavior. The IAB is a 30-item structured interview administered to parents that evaluates child antisocial behavior (Kazdin & Esveldt-Dawson, 1986). The items reflect various aggressive and antisocial behaviors (e.g., teasing others, fighting, stealing, breaking things). The severity of the behaviors are rated on a 5-point scale. Behaviors identified as present are also rated on a 3-point scale of duration. The items aggregate empirically into three factors, namely, overt behavior, covert behavior, and self-injury. A total score is derived from a sum of severity and duration ratings. Scores on this measure differentiate children with a DSM-III diagnosis of conduct disorder and correlate more with measures of externalizing behavior and aggression than with measures of internalizing behavior. The total IAB score was used to determine whether there was an inter-

action between firesetting status and the children's level of antisocial behavior on the CFI.

RESULTS

Psychometric Characteristics

Table III presents the psychometric properties of the CFI. Cronbach's alpha for the overall scale was .68. Alphas for the individual scales ranged from .39 to .74 (mean = .58), with four of the alphas in the moderate range. The highest and lowest alphas were found for the Curiosity About Fire and Knowledge About Things That Burn dimensions, respectively. To evaluate test-restest reliability, Pearson correlations between the scores of the six dimensions from the two assessment periods were computed. As shown in Table III, all but one of the correlations were statistically significant (p's $< .05$–$.001$). The overall mean test-retest correlation, based on Fisher's z transformation, was .56 ($p < .001$). The scale-remainder correlations were low but statistically significant for all the dimensions (mean = 1.8, except Supervision/Discipline).

As noted earlier, differences are likely to be found in the degree to which each individual dimension is associated with firesetting status. To determine whether these six dimensions simply reflected a single overall dimension, an intercorrelation matrix was computed. Six of the 15 correlations were statistically significant (range: .13–.27) at or below $p < .05$, adjusting (Bonferroni) for the number of correlations. The highest correlations were between Knowledge About Things That Burn and Fire Competence ($r = .22$, $p < .001$), and between Exposure to Models/Materials and

Table III. Psychometric Characteristics of the CFI Dimensions

Dimension	Alpha	Correlations		
		Test-retest[a]	Scale-remainder[b]	Mean interscale[b]
Curiosity about fire	.69	.46[d]	.13[d]	.10[c]
Involvement in fire-related activities	.47	.65[e]	.22[e]	.11[c]
Knowledge about things that burn	.74	.58[e]	.15[d]	.09
Fire competence	.55	.33[c]	.21[e]	.12
Exposure to models/materials	.61	.81[e]	.30[e]	.17[d]
Supervision/discipline	.39	.33[c]	.07	.03

[a] $df = 37$.
[b] $df = 442$.
[c] $p < .05$.
[d] $p < .01$.
[e] $p < .001$.

Involvement in Fire-Related Activities ($r = .27$, $p < .001$). The extent to which each individual scale correlated with the other remaining scales in the CFI was also examined. The low magnitude of these intercorrelations suggests little shared variance or redundancy. Consequently, the individual dimensions were not combined.[5]

Validity

Comparison of Firesetters and Nonfiresetters. It was expected that firesetters and nonfiresetters would differ on each dimension. To address this prediction, the six dimensions were evaluated using a 2(firesetting status) × 3(sample) × 2(high/low antisocial behavior) multivariate analysis of variance (MANOVA). Significant main effects were followed up with individual univariate analyses of variance (ANOVAs). For children with complete data, the means for the overall sample, the two groups differing in firesetting status, and the three samples are presented in Table IV.

Firesetters among the three samples were predicted to be higher on three dimensions in the measure. The MANOVA revealed a significant main effect for firesetting status ($F(6, 424) = 8.43$, $p < .0001$). As expected, separate univariate ANOVAs revealed that firesetters received significantly higher scores than nonfiresetters on the Curiosity About Fire ($F(1, 456) = 13.30$, $p < .0001$), Involvement in Fire-Related Activities $F(1, 462) = 43.11$, $p < .0001$), and Exposure to Models/Materials dimension ($F(1, 447) = 8.41$, $p < .004$).[6] In contrast to predictions, firesetters also received a *higher* score on the Knowledge About Things That Burn dimension ($F(1, 462) = 3.86$, $p < .05$). Firesetters obtained lower scores on the Supervision/Discipline ($p < .06$) and Fire Competence dimensions ($p < .09$), but these differences only approached significance.[7]

[5]Although the objective of scale construction was to preserve the content of the individual scales, the scales were subjected to a principal components factor analysis with varimax rotation to identify higher-order groupings. Based on an eigenvalue-one criterion, a three-factor solution was obtained that encompassed all six factors and accounted for 62.9% of the variance. The first factor, referred to as Interest/Contact (loadings: .62–.76), included the dimensions Curiosity About Fire, Involvement in Fire-Related Activities, and Exposure to Models/Materials. The second factor, referred to as General Skill (loadings: .62–.87), consisted of the two dimensions Fire Safety Competence and Knowledge About Things That Burn. The third factor consisted of the remaining Discipline/Supervision dimension (loading = .90).

[6]Data analyses were conducted with different degrees of freedom because of occasional missing data due to failure or unwillingness to complete certain questions in the three measures.

[7]Because of the uncertain status of matchplayers in the literature, separate group comparisons were requested, this time without matchplayers included in the nonfiresetting group. Follow-up ANOVAs revealed significantly higher scores for the firesetting group on certain dimensions (e.g., Curiosity, Involvement, Exposure, Knowledge and a lower score on the Supervision/Discipline dimension. Firesetters tended to receive lower scores only on the Fire Competence dimension.

Table IV. Means for Groups Differing in Firesetting and Sample Status[a]

Dimension	Overall		Firesetting status		Sample status		
			Fire	No fire	Non-patient	Out-patient	In-patient
	M	*SD*	*M*	*M*	*M*	*M*	*M*
Curiosity	19.1	5.6	20.3	18.3	19.3	18.8	18.8
Involvement	4.8	1.7	5.5	4.5	4.7	4.8	5.3
Knowledge	12.2	2.6	12.5	12.0	12.1	12.2	12.5
Competence	23.5	5.6	22.9	23.9	23.4	23.7	23.4
Exposure	10.6	3.9	11.3	10.2	10.2	10.4	12.1
Supervision/ discipline	9.1	2.6	8.8	9.3	9.0	9.0	9.4

[a]See text for full description of dimensions.

Relationship Between Fire Safety Knowledge Questionnaire and CFI Knowledge and Skill Scales. In theory, the concurrent validity of the CFI should be demonstrated by showing that the CFI correlates with other, more established measures of the firesetting dimensions. However as noted earlier, additional measures of firesetting experiences are unavailable. The Fire Safety Knowledge Questionnaire was used since it is the only alternative concurrent validity measure. Given the content of that questionnaire, it was predicted that only two CFI scales would be likely to correlate with this instrument, namely, Knowledge About Things That Burn and Fire Competence. Indeed, the only statistically significant correlations were found for the Knowledge ($r = .26$, $p < .001$) and Competence ($r = .40$, $p < .001$) scales.

Sample Status and Level of Antisocial Behavior

Because the aforementioned differences between firesetters and nonfiresetters might be related to demographic background, clinical status, and level of antisocial behavior of the samples, the external validity of the CFI in assessing aspects of the model was examined. The three-way MANOVA described in the previous section examined the interaction between firesetting status and sample status. Among the six individual dimensions that were analyzed, there were no significant interactions. Thus, the main effects for firesetting did not vary as a function of sample status.[8]

[8]The lack of an interaction is noteworthy insofar as there were significant differences among the three samples in age, gender, race, custody, number of family members in the home, and family social class. In general, the inpatient sample was older and included more males and Caucasians; the other two groups had larger families with a higher social class and more children residing with their biological parents.

It is possible that differences attributed to firesetting status could be explained by differences in level of antisocial behavior. The IAB was included to address this issue. Using the same three-way MANOVA, the separate and combined effects of the child's firesetting status and level of antisocial behavior were evaluated. A median split on total IAB scores was used to delineate groups that varied in the severity of antisocial behavior (high/low). The MANOVA revealed no significant interactions between firesetting status and level of antisocial behavior.[9] Moreover, none of the remaining interactions was statistically significant. Finally, a similar three-way MANOVA using firesetting status, sample (patient samples only), and DSM-III diagnosis of conduct disorder was conducted to determine whether group differences were accounted for by diagnosis of conduct disorder. There were no significant main effects involving conduct disorder diagnosis and no significant interactions.

To examine other differences in general background, firesetters and nonfiresetters were compared on demographic characteristics. Two continuous variables (age, number of family members in the home) were examined using analyses of variance, while the remaining variables were dichotomized and compared using Chi-square tests. The dichotomous variables were gender, race, family Hollingshead social class (Mdn = II), and custody (both biological parents vs. others). There was one significant group difference. A higher proportion of firesetters were male ($\chi^2(1, N = 463) = 10.78, p < .001$). A separate MANOVA examined the interaction between firesetting status and several child demographics (e.g., age, sex, race, socioeconomic status) on the CFI scales. The results yielded one significant interaction among firesetting, age, and race ($F(6, 372) = 2.14, p < .05$). Firesetters who were older and white received a higher score than those who were younger and black on the Knowledge About Things That Burn dimensions ($F(1, 455) = 7.72, p < .01$). Overall, these findings suggest that the specific domains assessed by the CFI did not vary as a function of the child's patient status, level of antisocial behavior, or demographic characteristics.

Classification of Firesetting Status

A discriminant analysis was conducted to evaluate the extent to which firesetters and nonfiresetters could be correctly classified on the basis of CFI scores and specific domains within the measure that contributed to this

[9]Because the IAB includes a firesetting item that loads on a covert behavior factor, the MANOVA was rerun by replacing the IAB total score with each of its two primary (i.e., overt, covert) factor scores, and it yielded nonsignificant interactions in both cases. There was a significant main effect for level of antisocial behavior ($F(6, 424) = 6.68, p < .0001$) whose discussion is beyond the scope of this paper.

classification. The analysis constitutes a partial test of the construct validity of the measure. The direct method was used to determine the extent of classification based on all six CFI dimensions. The function correctly classified 61.6% of the firesetters and 76.6% of the nonfiresetters for an overall classification accuracy of 71.0% (Wilks's Lambda = .88; $\chi^2(6) = 56.20$, $p < .0001$). A second discriminant analysis was calculated to examine the benefit of adding five child demographic variables (sex, age, race, custody, socioeconomic class) and the IAB total score. The function was significant (Wilks's Lambda = .85; $\chi^2(12) = 64.11$, $p < .0001$), but it yielded a slightly lower overall rate of correct classification (69.5%).

Sample Status and CFI Performance

The aforementioned MANOVA also revealed a significant main effect for sample status ($F(12, 848) = 2.03$, $p < .05$). The results of significant follow-up univariate ANOVAs then were examined using Duncan's Multiple Comparison tests. In terms of individual sample differences, inpatients had significantly higher scores than nonpatients or outpatients on the Exposure to Models/Materials ($F(2, 447) = 7.70$, $p < .001$) and Involvement in Fire-Related Activities dimensions ($F(2, 462) = 3.09$, $p < .05$).

DISCUSSION

This study examined the Children's Firesetting Interview, which consists of six dimensions that were operationalized because of their potential relationship to firesetting. The dimensions assessed the child's knowledge, skills, and personal experiences that related to firesetting. The instrument had acceptable internal consistency and test-retest reliability. Construct validity was supported by significant group differences between firesetters and nonfiresetters on four dimensions (Curiosity About Fire, Involvement in Fire-Related Activities, Exposure to Models/Materials, Knowledge About Things That Burn). These dimensions were also useful in helping to classify children according to their firesetting status. Concurrent validity was supported by positive correlations of two of the CFI scales (Knowledge About Things That Burn, Fire Competence) with another measure of fire safety knowledge. Classification of the children according to firesetting status was found to be adequate using all six dimensions and was not improved using three demographic characteristics and level of antisocial behavior. Thus, the CFI appears to operationalize reliable dimensions that are based on the risk-factor model, to discriminate firesetters from nonfiresetters, and to facilitate classification of the child's firesetting status.

That firesetters acknowledge greater curiosity about fire than nonfiresetters highlights the potential role of attraction to the stimulus complex of fire in the maintenance of firesetting. Conceivably, this dimension reflects the degree to which contact with fire through means other than the actual lighting of a fire (e.g., talking, viewing) is appealing or of interest to a child. The fact that generalized involvement with fire may be stimulating or reinforcing has been suggested in several conceptual accounts (Gaynor & Hatcher, 1987; Kolko, 1989; Wooden & Berkey, 1984).

Involvement in fire-related activities and exposure to persons who use fire for varied purposes (e.g., smoking, playing) were also more frequently acknowledged by firesetters than by nonfiresetters. Thus, firesetters appear to have greater access to incendiary materials and persons who model an interest in fire, apart from exhibiting a more diverse range of activities that pertain to fire more generally (e.g., pulling fire alarms). Whether the latter activities are precursors, correlates, or sequelae of firesetting cannot be determined here.

Firesetters also exhibited *greater* knowledge about combustible materials than nonfiresetters. Thus, children who engage in firesetting appear to possess an adequate understanding of certain concepts (e.g., materials that can burn). Firesetters tended to be less competent only in their abilities to use and respond to fire (e.g., a fire emergency telephone call, lighting and extinguishing a fire, escaping from a fire). Awareness of objects that burn and fire-safe behaviors, then, does not seem to inhibit involvement with fire. However, the impact of direct skills training on involvement in firesetting cannot be inferred from these data. Finally, firesetters only tended to report less overall exposure to supervision and discipline than nonfiresetters. The absence of adequate adult monitoring has been implicated in other studies of antisocial children (Patterson & Bank, 1986) and is a general family management process that cannot be sufficiently evaluated in this study owing to the small number of items used for assessment.

Group differences were not attributable to the child's psychiatric dysfunction as determined by sample status, general level of antisocial behavior, or, with respect to the patient samples only, a diagnosis of conduct disorder. Children's heightened risk status on various dimensions appears to be due to their involvement in firesetting directly, apart from any generalized involvement in antisocial acts. The absence of firesetting status $\times$ diagnostic status interactions is in accord with previous research (Kazdin & Kolko, 1986; Kolko, Kazdin, & Meyer, 1985). While firesetting is a formal referrent of the diagnosis of conduct disorder, it is exhibited frequently in children with other diagnoses (e.g., attention deficit disorder) or no diagnosis whatsoever. Although not a focus of the study, separate main effects emerged for sample status and level of antisocial behavior only. That is, inpatients

evincing serious psychiatric symptomotology received more extreme scores on certain dimensions than outpatients or nonpatients, while children exhibiting high levels of generalized antisocial behavior received more extreme scores than those with low levels of antisocial behavior.

The pattern of findings for child reports is similar to that obtained previously for parent reports. However, further evaluation of the relative significance of information obtained from each source is warranted. Child and parent correspondence will obviously vary as a function of the similarity of the content of each dimension, as has been shown with individual items tapping the child's general firesetting history (Kolko & Kazdin, 1988). In addition to the relative utility of reports from both sources in predicting follow-up firesetting status, a comparison of the CFI dimensions, the child's initial firesetting status, and other child and parent risk factors in predicting recidivism also should be examined. Potential child factors include hyperactivity, peer relationship problems, and aggression (Jacobson, 1985; Kafry, 1980; Kolko et al., 1985), and family factors include parental depression and absences, divorce or separation, being adopted, abuse and neglect, and family stress (Cole, Grolnick, McAndrews, Matkoski, & Schwartzman, 1983; Kazdin & Kolko, 1986; Showers & Pickrell, 1987; Wooden & Berkey, 1984). The integration of parent and child data may enhance the assessment of firesetting risk and likelihood of recidivism by yielding complementary information to facilitate empirical comparisons with existing methods (e.g., FEMA, 1983). Follow-up analysis would also document the long-term stability of each risk factor.

Further research should attempt to establish the construct validity of the measure using novel criteria that form a nomological net, such as perceptual measures, preferences for stimuli containing fire-related stimuli, choice tasks that provide access to fire-related or non-fire-related activities, and autonomic measures of arousal. Finally, whether reliable profiles of risk factors can be identified also warrants further research. Such findings would critically evaluate conceptualizations of typologies that implicate differences in personal motives, underlying psychopathology, and risk for recidivism (FEMA, 1983; Wooden & Berkey, 1984).

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