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The Role of Risk and Protective Factors in Predicting Symptomatology in Adolescent Self-Identified Children of Alcoholic Parents[1]

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Tested a stress process model for predicting mental health symptoms in children of alcoholics (COAs). Stress and mental health measures were completed twice over a 3-month period by 145 high school students, 43 of whom self-identified as COAs. Using structural equation modeling, a stress process model for predicting mental health symptoms in children provided a good fit to the data. COA status was related to higher levels of negative and lower levels of positive events. In turn, positive and negative life events were found to have an immediate, but not a longitudinal, direct effect on adolescent symptomatology.

Numerous studies have reported that children with alcoholic parents are more at risk than their peers for a variety of mental health problems including emotional disturbance (Fine, Yudin, Holmes, & Heinemann, 1976; Moos & Billings, 1982), antisocial and aggressive behavior problems (Fine et al., 1976; Herjanic, Herjanic, Penick, Tomelleri, & Armbruster, 1977), depression (Clair & Genest, 1986; Moos & Billings, 1982; Roosa, Sandler, Beals, & Short, 1988), and anxiety (Anderson & Quast, 1983; Moos & Billings, 1982). Despite

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the increased risk status of this group, it is clear that many of these children do not experience such problems (Beardslee, Son, & Vaillant, 1986; el-Guebaly & Offord, 1977; Heller, Sher, & Benson, 1982; Obuchowska, 1974; Roosa, Sandler, Beals, & Short, 1988; Werner, 1986). Unfortunately, very little research has attempted to identify factors that appear to protect some children of alcoholics from risk or those factors that increase risk for others (Heller et al., 1982; West & Prinz, 1987). The identification of characteristics that distinguish children of alcoholics with successful adjustment from those who will experience mental health problems is a necessary condition for designing effective prevention programs for this high-risk group.

A few researchers have attempted to identify factors that may be related to increased or decreased risk for children of alcoholics. For instance, children of alcoholics from low-income homes, those with few siblings (el-Guebaly, Offord, Sullivan, & Lynch, 1978), or those who are female (Kammeier, 1971) may be at increased risk. Although these demographic characteristics may be useful in identifying some high-risk children in alcoholic homes, they are not amenable to change and therefore have little relevance for intervention or prevention program development. Other studies have reported that children of alcoholics who have a strong supportive relationship with the nonalcoholic parent may be at reduced risk (Obuchowska, 1974; Werner, 1986). Another series of studies suggests that only those children whose lives are disrupted by abusive drinking are at increased risk (Callan & Jackson, 1986; Moos & Billings, 1982; Wolin, Bennett, & Noonan, 1979) and that this risk status drops or disappears when the alcoholic successfully recovers or abstains (Callan & Jackson, 1986; Moos & Billings, 1982).

A conceptual model that may explain the development of psychological problems in children of alcoholics is one that considers parental alcoholism as a chronic condition that can affect the ongoing caretaking environment of the child. According to this model, the effect of parental alcoholism on the child is mediated by its effect on stressful and positive experiences in the child's environment. This model assumes that in some families, parental alcoholism does not result in the increased occurrence of stressful experiences to the child, whereas in other families alcoholism is a nearly continuous, disruptive presence. Logically, children in the latter families would seem to be at greater risk of developing mental health problems. Similar process models have been widely used to understand the mental health of children in other risk situations such as parental divorce and parental death (Felner, Stolberg, & Cohen, 1975; Sandler, Gersten, Reynolds, Kallgren, & Ramirez, 1987; Sandler, Wolchik, Braver, & Fogas, 1986). Evidence that parental alcoholism increases the level of stress within the family (Moos & Billings, 1982) also supports the use of this model for children of alcoholics.

The purpose of the current study is to test a short-term longitudinal model which specifies that the effect of parental alcoholism on children's psychological symptoms is mediated by the different levels of positive and negative events experienced by children of alcoholics (COAs) compared to their peers. The model presented in Figure 1 is based upon both the stress-process theory of the effect of parental alcoholism and the findings from several previous longitudinal studies of the effects of positive and negative events on adolescents in the general population. The Time 1 cross-sectional paths from COA status to events (a and b) and from events to symptoms (c and d) propose a mediational model within a cross-sectional framework. This model is consistent with previous findings from studies of the relationship between stress and psychological symptoms in adolescents (Cohen, Burt, & Bjorck, 1987; Compas, Wagner, Slavin, & Vannetta, 1986; Swearingen & Cohen, 1985). It is also consistent with the evidence that COAs experience more negative events than their peers (Clair & Genest, 1986; Moos & Billings, 1982; Roosa, Sandler, Gehring, Beals, & Cappo, 1988). Inference about the causal relationship between events and symptoms is limited in a cross-sectional study, however, because several alternative models may plausibly account for this relationship. Using a longitudinal design provides

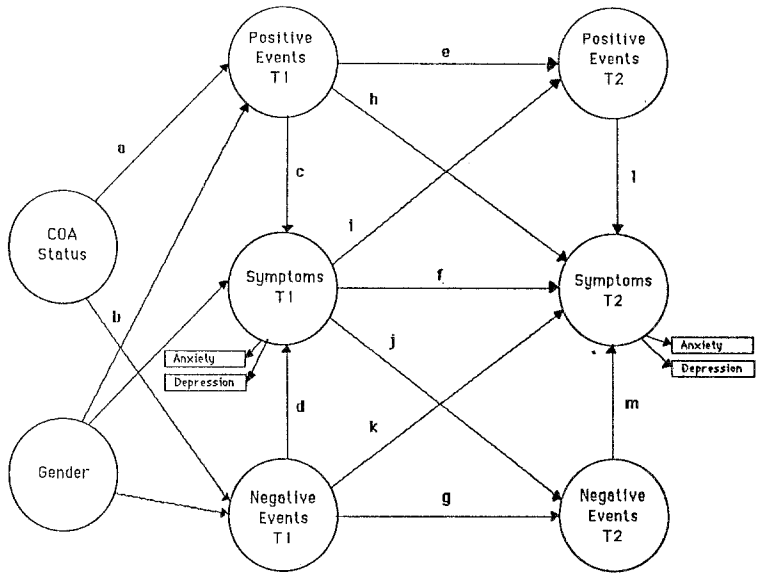

Fig. 1. Model showing life events as mediators between parental alcoholism and mental health status.

a more stringent test of the causal direction of these relationships and a means of probing these alternative hypotheses. In a longitudinal design, the time-lagged paths (h, i, j, and k) satisfy the criterion of time precedence (Kenny, 1979) in which a cause must precede its purported effect. The time-lagged paths from events to symptoms (h and k) are tests of the prediction that events cause the development of symptoms.

Prior studies with adolescents have disagreed about whether or not there is a significant longitudinal path from events to symptoms. For instance, neither Cohen et al. (1987) nor Swearingen and Cohen (1985) reported a longitudinal effect for negative events on symptoms. On the other hand, in a three-wave study, Compas et al. (1986) reported a longitudinal relationship between both negative events and social support and symptoms from Time 1 to Time 2, but not from Time 2 to Time 3. Unfortunately, methodological issues make comparisons between the studies of Cohen et al. and Compas et al. difficult. First, different life event measures were used. Second, the results of Compas et al. were generated by a large number of multivariate analyses despite a sample size of 64 suggesting that there may have been problems with alpha inflation. Similarly, Swearingen and Cohen's results were generated by repeated multivariate analyses with a sample of 71. Third, although each wave in the Compas et al. study was separated from the others by 3 months, the life events measure used reported on events that occurred during the past year. Because of the overlap in the time periods sampled at each measurement, it is not surprising that there were not significant relationships across variables from wave 2 to wave 3 when wave 2 variables were controlled. Thus, it is not clear, based upon the mixed results of earlier studies, whether or not there is a longitudinal relationship between events and symptoms.

The longitudinal paths from symptoms to events (i and j) are predicted on the basis of a transactional model of human development (Seifer & Sameroff, 1987). Theoretically, Seifer and Sameroff have proposed that children both cause changes in their environment and are affected by environmental changes. For example, a child's acting-out behavior may cause reactions by family members with consequences that reverberate throughout the family system (Patterson, 1985). The parents may argue with each other over how to handle these problems, may become emotionally distressed, or otherwise provide a less positive environment for the child in response to the environmental conditions provided by the child. Several studies have found this longitudinal path with adolescent samples (Cohen et al., 1987; Compas et al., 1986; Swearingen & Cohen, 1985; Wagner, Compas, & Howell, 1988).

The cross-sectional paths (l and m) from events to symptoms at Time 2 test the relationship between events and symptoms controlling for the pri-

or levels of events and symptoms. These paths allow us to rule out the hypothesis that the event–symptom relationship simply reflects a relationship between chronic negative conditions (e.g., low social class) and symptoms (Dwyer, 1984). In effect, they test whether a change in event levels is related to a change in symptom levels. Prior research has found mixed evidence on whether Time 2 negative events relate to Time 2 symptoms controlling for Time 1 events and symptoms. Gersten, Lagner, Eisenberg, and Simcha-Fagan (1977) and Swearingen and Cohen (1985) failed to find this relationship, although Cohen et al. (1987) did report finding support for this relationship.

The purpose of this study is to test these paths derived from a stress process model of the development of psychological symptoms in children of alcoholics. The model in Figure 1 is evaluated using data from a longitudinal study of adolescents using structural equation modeling.

METHOD

Participants

Two samples of high school students were recruited from a school district in a large metropolitan area in the Southwest. The larger sample was enlisted from the high school (referred to as the focal school) with an ethnic and social class composition that best reflected the demographics of the metropolitan area. In order to increase the number of self-reported children of alcoholics, a second sample was recruited from voluntary self-help groups for students concerned about parents, siblings, or friends with chemical abuse problems (which were held in five other high schools in the same district).

In the focal school, informed consent was obtained from parents by sending a letter outlining the purpose of the study and assuring parents that students' answers would be confidential. Parents of 1,008 students enrolled in health, home economics, and physical education classes were contacted. Parental consent was obtained for 278 students, 28% of the total. Sixty-nine students were absent the day the study took place and one student's questionnaire was discarded because it was completed incorrectly. The final sample for the school was 208, 21% of the initial mailing and 75% of those with parental consent. The ethnic composition of the sample was 67% Anglo, 18% Hispanic, 10% black, and 5% other. Since the ethnic composition of the high school was 49% Anglo, 27% Hispanic, 16% black, and 7% other, Anglos were overrepresented in the sample and minorities were somewhat underrepresented. Data were not available for determining the representativeness of this sample on other important variables such as social class, school grades,

stress, or mental health. Of this sample, 38 (18%) self-identified as children of alcoholics using the criteria described below.

The second sample of self-identified COAs was recruited from students attending intervention groups for persons "concerned about someone else's substance abuse" in five other high schools in the same school district (students from the self-help group in focal high school were excluded from the study so that the first sample of self-identified COAs would not have a self-help bias). Students self-selected to attend these groups and were excused from class 1 day a week to do so. Seventy-five students (57 female and 18 male) from these groups completed questionnaires for the study; only the 32 (43%) students who self-identified as COAs according to screening criteria were included in the present analysis. Because of possible biases in this group due to their enrollment in a treatment program, their scores were compared to those COAs from the focal high school. There were no significant differences in symptom scores (anxiety, depression, self-esteem, and drinking behavior) or stress (by either measure) of self-identified children of alcoholics from the focal high school sample or from the self-help groups (Roosa, Sandler, Beals, & Short, 1988). Similarly, the two groups of COAs were similar on six of the eight correlations of interest to this study (positive and negative events with depression and anxiety at both Time 1 and Time 2); the two differences were due to a few outliers whose impact would diminish if the groups were combined. Since these two samples of self-identified COAs were so similar on the target variables, the groups were combined in the analyses that follow.

This analysis is based on a total sample of 145 students who had complete data on all measures at both assessment points, 43 (30%) of whom were self-identified children of alcoholics (28 from the general high school sample and 15 from the self-help group). A comparison of the 95 students who did not complete both the pretest and posttest with those who did revealed no differences in age, grade level, or distributions of gender or ethnicity. Furthermore, there was no difference in the dropout rates for self-identified COAs or their peers.

A comparison of the self-identified COAs ($n = 43$) and their peers ($n = 102$) showed that the COAs were slightly older (15.6 vs. 15.0), slightly ahead in grade level (10.3 vs. 9.9), and much more likely to be female (70 vs. 46%). Among these three differences, only gender was significantly related to the dependent variables; the higher proportion of females in the COA group and the well-established relationship between gender and symptoms (cf. Eme, 1984; Maccoby & Jacklin, 1974) provides support for including gender as an exogenous varible in the model shown in Figure 1. There were no differences in ethnicity between the groups.

Instruments

Psychological adjustment was assessed using two subscales (depression and anxiety) of the Hopkins Symptom Checklist (HSCL; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). One item, "Loss of sexual interest or pleasure" was removed from the depression subscale because of its controversial nature in school settings. Students were asked to indicate how much they were bothered by each of the remaining items in the past week. Internal consistencies for both subscales for this sample were good (.84 for anxiety; .86 for depression). In the model shown in Figure 1, the anxiety and depression scales are used as multiple indicators of symptoms; that is, they are used in a measurement model that creates a theoretical variable "symptoms" from the common underlying variance of the two observed variables.

Children of Alcoholics Screening Test. In order to identify self-reported children of alcoholics, participants completed the Children of Alcoholics Screening Test (CAST; Jones, 1983a, 1983b). The CAST consists of 30 items that measure children's attitudes, feelings, and experiences related to their parents' drinking behavior. Internal consistency for the CAST for the current study, using Kuder-Richardson-20, was .95. Jones found that a cutoff score of 6 or more reliably identified 100% of both children of clinically diagnosed alcoholics and self-reported children of alcoholics. However 23% of Jones' control group also scored 6 or above. Since Jones did not directly assess the drinking behavior of parents of the control group students, it is impossible to determine what portion of this 23% were false positives and what portion were actually children of alcoholics. In order to improve the validity of the screening process and to set a more conservative criterion for identifying children of alcoholics for the current study, students had to score 6 or more on the CAST *and* answer "yes" to one of the following CAST items: "Did you ever think your father was an alcoholic?" or "Did you ever think your mother was an alcoholic?" Sher and Descutner's (1986) finding that siblings have a high degree of agreement ($K = .72$) on global judgments of parental alcoholism provides evidence for the reliability of adolescents' judgments in this area. Using this dual criterion, 18% (38) of the focal school sample and 43% (32) of the adolescents from the self-help groups self-identified as children of alcoholics. Although the actual level of parental drinking-related symptomatology is not assessed by the CAST, it does seem to have high content validity as a measure of children's concern or distress about parental drinking. However, since the CAST is not a direct measure of parental drinking behavior, we refer to those children who met the dual criterion as "self-identified children of alcoholics."

Life Events Measures. Two life events measures were used. The first, the Children of Alcoholics Life Events Schedule (COALES; Roosa, Sandler, Gehring et al., 1988) was developed to assess stress specific to the milieu of the alcoholic family. The COALES consists of 39 objectively verifiable, family-focused events that are generally thought to be beyond the child's control and which are not mental health symptoms. Although these items were generated by COAs and other experts on the alcoholic family, most of these events (e.g., Mom and Dad argued in front of you) could occur in any type of family; these events are just more likely to occur in alcoholic families. Participants were asked to indicate which of these events occurred to them in the past 3 months. Two scores were obtained from the COALES by counting the number of events reported: a positive events (13 items; e.g., your family got together with relatives for good times) and a negative events (22 items; e.g., Mom/Dad was drunk in public) score. The remaining 4 items are neither positive or negative and serve as fillers. Test-retest reliability coefficients for these scores were .88 for each scale over 2 weeks. Internal consistency reliability for the COALES subscales, using Kuder-Richardson-20, was .81 for positive events and .71 for negative events. Roosa et al. reported that the COALES demonstrated both concurrent and discriminant validity. The second life events measure was the General Life Events Schedule for Children (GLESC; Sandler, Ramirez, & Reynolds, 1986) which included 38 items that had been used in previous adolescent life events scales. Like items in the COALES, GLESC items covered the past 3 months and were selected for inclusion if they were not indicators of the child's own mental health, they were objectively verifiable occurrences in the child's environment, and they were thought to be generally beyond the child's control. The GLESC is also scored to produce positive (5 items) and negative (20 items) life event scores; the remaining items serve as fillers. Test-retest reliability coefficients were .71 and .76 for positive and negative events, respectively, over 2 weeks. For the current study, adolescents were given a positive events score and a negative events score based on a count of the total number of such events that they checked on each schedule. When the two events subscales from both instruments were combined, the resulting positive (16 items) and negative (37 items) events scales had test-retest reliability coefficients of .89 and .81, respectively. (The two life events scales have 2 positive and 7 negative items in common.) Scores from these two life events measures were combined to provide a more complete assessment of the stress that adolescents experience including the relatively random events that make up the GLESC and those more specific to troubled and alcoholic families such as those on the COALES.

Procedure

Research assistants presented the questionnaire to groups of 10 to 40 students. The battery contained, in order, demographic questions, the COALES and GLESC, CAST, HSCL, and other measures not used in this study. Directions and items were read to the students for the first half of the battery which contained the most complex measures, and students finished the second half on their own. Three months later the life event measures and the HSCL were readministered using similar procedures.

Analysis

The hypothesized model shown in Figure 1 was evaluated using LISREL VI (Joreskog & Sorbom, 1984). This analysis estimates the coefficients for the proposed pathways, the significance of each, and provides information for evaluating the overall fit of the model. However, before proceeding to the analysis of the structural model, the data were examined using repeated measures multivariate analysis of variance and zero-order correlations.

RESULTS

The means and standard deviations for self-identified children of alcoholics and their peers on life events and symptomatology measures at Time 1 and Time 2 are shown in Table I. The results of a repeated measures multivariate analysis of variance indicated that self-reported parental drinking status significantly differentiated the two groups of adolescents on both the mutivariate ($F = 16.8, p < .001$) and univariate levels; self-identified children of alcoholics scored lower on positive events ($F = 13.4, p < .001$) and higher on negative events ($F = 11.3, p < .01$),[3] anxiety ($F = 53.9, p < .001$), and depression ($F = 25.1, p < .001$) than their peers. There was a main effect for time ($F = 3.0, p < .05$) but the only significant longitudinal difference was a decline in negative events and a trend ($p < .10$) for a decline

[3]The differences between self-identified COAs and their peers on the combined life event measures were not due solely, or even primarily, to the inclusion of a life events measure tailor made for COAs. In fact, COAs differed from their peers on both the positive and negative events scales from both the GLESC and the COALES with $p < .001$ in all cases. COAs seem to live in more stressful households regardless of the measure used (cf. Clair & Genest, 1986; Moos & Billings, 1982).

Table I. Comparison of Self-Identified Children of Alcoholics and Their Peers on Positive Life Events, Negative Life Events, and Symptoms at Time 1 and Time 2, Using Repeated Measures Multivariate Analysis of Variance

	Self-identified children of alocholics (n = 43)		Peer group (n = 102)	
	M	*SD*	*M*	*SD*
Time 1				
Positive events	7.91	3.85	10.65	3.96
Negative events	10.77	4.14	5.41	4.04
Anxiety	1.90	0.63	1.58	0.62
Depression	2.39	0.77	1.79	0.66
Time 2				
Positive events	8.22	3.83	10.51	4.21
Negative events	9.56	5.03	4.57	4.30
Anxiety	1.90	0.77	1.53	0.57
Depression	2.25	0.69	1.74	0.61
Multivariate F				
COA status	16.7[b]			
Time	3.0[a]			
COA × Time	1.0			

[a] $p < .05$.
[b] $p < .001$.

in depression at Time 2. There was no significant Time × COA Status interaction effect.

The intercorrelations of the variables in the model are shown in Table II. As expected, positive events were negatively correlated with anxiety and depression scores both cross-sectionally and longitudinally. Similarly, negative events were positively correlated with anxiety and depression scores both cross-sectionally and longitudinally. Table II also shows that being female was related to higher negative events, anxiety, and depression scores. Being a self-identified child of an alcoholic was related to lower positive event scores, and higher negative event, anxiety, and depression scores. Finally, the stabilities of the measures over time (each variable at Time 1 correlated with itself at Time 2) were relatively strong (positive events, $r = .76$; negative events, $r = .69$; anxiety, $r = .63$; depression, $r = .71$). The size of the correlations between life events and symptoms shown in Table I are similar to those reported in related studies (Cohen et al., 1987; Compas et al., 1986; Swearingen & Cohen, 1985).

The results of the analysis of the hypothesized structural equation model are shown in Figure 2. Overall, the proposed model fits the data well: $\chi^2(23) = 30.9$, $p < .12$. A nonsignificant chi-square indicates that the vari-

Table II. Zero-Order Correlations of Positive Events, Negative Events, Anxiety, Depression, COA Status, and Gender at Time 1 and Time 2[a]

	1	2	3	4	5	6	7	8	9
1. Positive events 1	–								
2. Negative events 1	−.21	–							
3. Anxiety 1	−.38	.33	–						
4. Depress 1	−.46	.47	.74	–					
5. Positive events 2	.76	−.19	−.28	−.34	–				
6. Negative events 2	−.21	.70	.36	.43	−.18	–			
7. Anxiety 2	−.32	.33	.63	.50	−.27	.45	–		
8. Depress 2	−.44	.35	.60	.71	−.34	.40	.73	–	
9. COA status[b]	−.30	.52	.23	.37	−.25	.45	.26	.34	–
10. Gender[c]	−.10	.20	.31	.36	−.09	.16	.19	.34	.22

[a]Correlation coefficients greater than .14 were significant at the $p < .05$ level.
[b]COAs were coded 1 and non-COAs were coded 0.
[c]Gender was coded 1 for male and 2 for female.

ance-covariance matrix generated by the model was not significantly different from the original input matrix; that is, the hypothesized model provided a good fit to the data. However, given that the probability value of chi-square is dependent on the size of the sample studied (the larger the sample, the greater the difficulty in obtaining a nonsignificant chi-square), several alter-

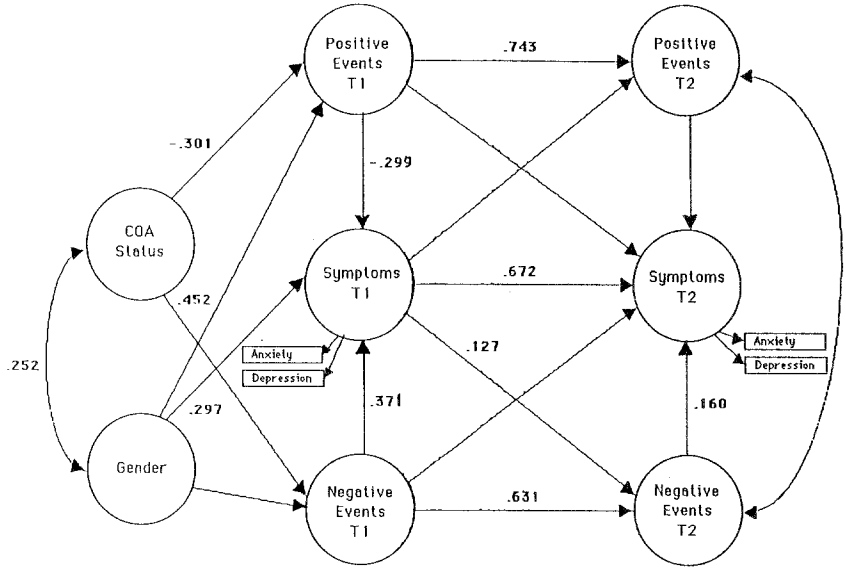

Fig. 2. Standardized estimates for the stress coping model of the relationship between parental alcoholism and adolescent mental health (only values for significant paths, $p < .05$, are shown).

native fit indices have been suggested in the literature. The most widely cited of these is Bentler and Bonnett's (1980) normed fit index which compares the fit of the proposed model with that of a null model in which there are no relationships between variables. The normed fit index for the proposed model is greater than .961, again demonstrating a good fit. This analysis does not rule out the possibility that there are alternative models that could fit the data as well, but it does provide support for the stress process model as a reasonable model for explaining the role of stress in the lives of children of alcoholics.[4]

As predicted, being a child of an alcoholic was negatively related to the number of positive events experienced and positively related to the number of negative events experienced. Symptomatology at Time 1 was higher for females, persons experiencing low levels of positive events, and those experiencing high levels of negative life events. At Time 2, symptomatology was predicted only by the previous level of symptomatology and the current (Time 2) number of negative events; neither negative or positive events at Time 1 contributed significantly to the prediction of symptoms at Time 2 nor did positive events at Time 2 influence symptoms at Time 2. In fact, the only significant longitudinal path other than the stabilities (horizontal paths) of each variable indicated that future negative events were predicted by the previous level of symptomatology. The stabilities clearly showed that future levels of positive and negtive events or symptoms were strongly predicted by the previous levels of each variable.

One particularly intriguing path in Figure 2 is the one that indicates that symptoms at Time 1 predict the level of negative events at Time 2. Because this pathway seems counterintuitive but is reliably reported across studies (cf. Cohen et al., 1987; Compas et al., 1986), a systematic effort was undertaken to further understand this pathway. We were interested in investigating whether the symptom–event lagged path (j) could be attributable to symptoms leading to the increased occurrence of a particular type of negative event in the child's environment. Our event list contained a large number of items that reflected two different types of events, those related to parental drinking or family conflict. It could be that a child's symptoms led

[4]In addition to evaluating the fit of a model to the data matrix, another strength of structural equation modeling is its ability to compare the fit of alternative models. In the current case, an obvious alternative model is a direct effects model in which a direct path is added from COA Status to Symptomatology and the vertical cross-sectional paths are removed. When this comparison is made the model in Figure 1 provides a marginally better fit to the data than a direct effects model but the comparison is of little value; in effect, mathematically the two models are not distinguishable from one another. For this reason, the results of the LISREL analysis provide support for a stress process model but they do not rule out other alternarive models.

to increased arguments between parents and an escalating pattern of recrimination within the family. It seems somewhat less likely that child symptoms would lead to increased parental drinking events, although, if we conceptualize child problems as a stressor for the parent, such a pathway might be plausible.

Therefore a panel of nine psychology graduate students was asked to identify items from the life events measures that were either (a) strictly drinking-related items (e.g., You saw Mom or Dad drunk) or (b) were indicative of conflict within the family (e.g., Mom said bad things about Dad). Items were selected for these subscales only if 67% of the judges agreed on the placement of the item. This process resulted in an 8-item drinking subscale and an 8-item family conflict subscale. Afther the subscales were constructed, the structural equation model in Figure 1 was reevaluated using these scores instead of the combined negative events score.

The results of structural equation modeling using the family conflict and drinking events subscales in place of the negative events score were quite similar to the results shown in Figure 2. Using either the drinking or family conflict life events subscales in place of the larger negative events scale resulted in a good fit and all estimates except those for the path from symptoms to negative events were quite similar to those shown in Figure 2. However, the path coefficient for the symptoms to negative events path was small (.06) and nonsignificant when the drinking events subscale was used; it was larger (.15) and significant ($t = 2.0$, $p < .05$) when the family conflict subscale was used.

DISCUSSION

Research on the impact of alcoholism on childrens' mental health, with few exceptions, has been descriptive in nature and has provided little information about potential causal mechanisms for increasing or decreasing the risk status of these children (West & Prinz, 1987). The current study of adolescents used both a short-term longitudinal design and a structural equation modeling approach to test the efficacy of a stress process model for understanding the impact of parental alcoholism on the mental health of the children involved.

The results provide some support for the stress process model by which the impact of parental alcoholism is transmitted to children through the amount of positive and negative events experienced. However, support for the role of positive and negative life events as mediators of the effects of parental alcoholism on child symptoms was obtained only cross-sectionally.

Current levels of life events, positive and negative, were related to the current level of symptoms at Time 1; at Time 2, only the current level of negative events influenced the current level of symptoms. Neither of the longitudinal paths from events at Time 1 to symptoms at Time 2 were significant. It appears that the influence of life events might be relatively immediate (cf. Wagner et al., 1988) for these adolescents with no direct 3-month longitudinal effect on symptoms. One possible explanation for the results of this study is that positive and negative events have an immediate effect on symptoms at Time 1 and, given the relatively large stability for symptoms (.67), an indirect infuence on later symptoms. Unfortunately, since the only significant event-to-symptom relationships in the model are cross-sectional and the one significant longitudinal path is from symptoms-to-events, several alternative explanations are equally plausible, including the explanation that symptoms cause events. These results are identical to those of Cohen et al. (1987) and Swearingen and Cohen (1985) in their studies of the effects of stress in the general adolescent population.

The significant path (m) from Time 2 negative events to Time 2 symptoms controlling for Time 1 events and symptoms is consistent with the theory that increases in recent negative events increase symptoms and do not simply reflect the effect of ongoing stressful processes. These results also are consistent with prior longitudinal evidence that changes in the family environment of children of alcoholic parents are accompanied by changes in their level of symptomatology (Moos & Billings, 1982). Similarly, this part of the model suggests that at least one difference between those children of alcoholics with successful adjustment and those who experience mental health problems is the amount of stress experienced. Thus, one element of a preventive intervention strategy based on these results would be teaching young children of alcoholics better ways of coping with stressful conditions, especially family conflict (cf. Roosa, Gensheimer, Short, Ayers, & Shell, 1989). However, one would have more faith in the utility of this implication for intervention if the longitudinal path from negative events to symptoms also had been significant.

As predicted, symptoms at Time 1 appear to have a direct longitudinal influence on future negative life events, a result reported by others (Cohen et al., 1987; Compas et al., 1986; Swearingen & Cohen, 1985; Wagner et al., 1988). In their studies, Swearingen and Cohen (1985) and Cohen et al. (1987) divided negative life events into two categories, controllable and uncontrollable, and determined that symptoms were predictive of both controllable and uncontrollable negative events. In the current study, negative life events were categorized as directly related to parental drinking or family conflict. Our results indicate that symptoms predicted future levels of family conflict but not future levels of drinking-related events. Apparently, families of children with higher levels of symptoms experienced a more con-

flictual family environment 3 months later. It is not possible to tell from the data whether the incresed family conflict at Time 2 was a product of children's acting-out behavior, parental concern and blame seeking for the child's symptoms, or both.

Furthermore, it is possible that a common third variable not included in the model could account for the relations between symptomatology at Time 1 and negative events at Time 2. For example, a major event occurring at Time 1 could have an immediate effect to increase symptomatology and a longitudinal effect to increase the occurrence of other negative events over time. For instance, a parent losing a job at Time 1 could cause children to become depressed or angry initially and could also lead to the occurrence of additional negative events over time such as parental arguments or parental drinking.

The failure to obtain a prospective longitudinal effect for events on symptoms is consistent with several studies with adolescents (e.g., Swearingen & Cohen, 1985). Prospective longitudinal effects of events are regularly reported in the adult literature however (e.g., Sandler & Guenther, 1985) and the one adolescent study reporting this effect was done with college students (Compas et al., 1986). The latency of the effect of events on symptoms is not well understood and may be shorter in adolescents than in adults. Future longitudinal studies on event–symptom relationships should systematically explore the latency-of-effect issue in order to identify the appropriate time lag between the occurrence of life events and the onset and duration of resulting symptoms. Similarly, future research needs to determine the reasons for the different responses of adolescents and adults to stressful events. To date little attention has been given to developmental issues in responses to stress.

Additionally it should be noted that these results were obtained using a nonrepresentative, volunteer sample and all the data came from self-report. Because of these limitations, one cannot be sure that the level of stress and symptomatology reported above, or the relationships between the variables, would be similar to that of other samples. Since only 28% of the target population responded to the recruitment effort, it is reasonable to argue that participants were probably less stressed than the majority of their peers; that is, more highly stressed families may have been less likely to respond to the recruitment effort. Future studies should attempt to conduct similar analyses with more representative samples and using data from multiple reporters, especially for classification of parental drinking status, to increase the validity of the findings. Finally, the model tested in this study focuses only on the relatively short-term effects of COA status on stress and psychological symptoms. More research is needed to understand the long-term effects of COA status on the development of psychological symptoms in adolescents and adults.

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