EFFECTS OF LIFE EVENTS STRESS ON CHILDREN

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ABSTRACT

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An attempt was made to determine the relationship of stress with the behavior problems, academic performance, and absenteeism of 80 first grade, 96 third grade and 113 sixth grade students. Parents completed the Children's Life Events Inventory, a stress measure, while the teachers completed three measures: the Portland Problem Behavior Checklist, an academic rating scale, and the number of days absent per student. A multivariate analysis of variance indicated significant stress effects on academic performance and behavior problems, significant grade effects on absenteeism and behavior problems and a significant grade by stress interaction effect on absenteeism. Higher levels of stress were associated with higher reported behavioral problems and with poorer academic performance. Pearson r's performed on the dependent variables indicated a significant negative correlation between academic performance and behavior problems as well as a significant negative correlation between academic performance and absenteeism.

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THEORY

It has been well documented that discreet but severe life stresses, such as being involved in a natural disaster (Brown, 1972; Coates, 1967) as well as chronic diseases (Dohrenwend, 1973; Mueller et al., 1977), correlate highly with both psychological and somatic ailments. Selye (1957) demonstrated that many nervous and emotional disorders such as high blood pressure, gastric and duodenal ulcers, certain types of rheumatic, allergic, cardiovascular and renal diseases may result from the way an individual reacts to stress. Although it is difficult to demonstrate a clear causal link between psychological and physical impairment and stress reaction, there have been literally thousands of studies (Croog, 1978; Heisel et al., 1973) that have correlated the two variables.

The objective of this paper is to review some of the research that has been conducted in one specific area of stress. This line of study has been conceptualized by Holmes (1950, 1951, 1952, 1967) as life events and defined as any life change that requires a person to undergo some amount of readjustment. Because attempts have been made to empirically define and measure the concept, it can be easily scrutinized for its weak points as well as for its merits. This allows researchers to undertake studies attempting to determine whether an increase in life changes will also increase the probability of impairment.

In the 1950's Holmes postulated that severe crises may

not be the sole events that cause psychological or physical impairment. He suggested that change per se could also cause an inbalance in the human system. From his observations during many years of clinical experience he noted that what may be objectively seen as a desirable change in one's life can also produce an undesirable effect on that person. According to Holmes, events such as moving into a new house, winning an award or getting married, which are generally considered to be positive occasions, may initiate stress. Given these observations, Holmes went on to generate a series of forty-three events which he considered to be prevalent in the lives of most people and which also produce stress. He conceptualized stress as any life change that requires a person to undergo some amount of readjustment and postulated that if such events cluster at some point in time, the cumulative stress effects may produce maladjustment at some level.

To test his hypothesis Holmes constructed a forty-three item measure called The Schedule of Recent Experience (SRE), as the defining stress measure. The greater the number of stress events that an individual receives on the SRE, the more he is considered to be under stress. The obvious flaw in this manner of measuring stress is that the entire list of items were given equal weights. The item "death of a spouse" for example was considered to produce an equal amount of stress as did the item "an outstanding personal achievement". Holmes recognized this pitfall and in 1967, along with Rahe, developed the Social Readjustment Rating Scale. This scale is identical to the

SRE in items but attempts to give differential weights to the different items in the scale. This revision not only considers the overall quantity of stressful events but also the qualitative difference between the events. The SRRS assumes that an event such as marriage, entails more readjustment than does taking a vacation.

The method used to assign values on the items was an empirical one. The author set an arbitrary value of 500 stress units (Life Change Units) to the event "marriage" and asked people to assign values to the other items in the scale. This produced a hierarchy of events where "death of a spouse" was considered to be the most stressful and "minor violation of the law" was considered to be the least stressful. A stress score was now considered to be the amount of Life Change Units (LCU) over a specified period of time. Generally the time frame utilized was between six months and two years prior to the assessment of health.

VALIDATION OF INSTRUMENT

Initially, the SRRS was administered to and weighted by an American middle class population. However, it has since been validated across a variety of cultures and sub-cultures. Isherwood and Adams (1967) found a correlation of .97 between Americans and New Zealanders in setting stress values to the items in the SRE. In a comparable study conducted by Harmon et al. (1970), they found a correlation of .88 between Americans and West-Europeans. Similar high correlations have been reported between American and Spanish

(.82) populations as well as between White Americans and Black Americans (.80).

It appears therefore that the work of Holmes and his followers has opened up an area of research that may produce much useful information. Further, and not to be underestimated, Holmes' construct is readily amenable to testing. If he is correct in his proposition that clustering of events increases the probability of some type of maladjustment, then two hypotheses can be made. The first is that in retrospective studies, groups who have been more prone to psychological or physical ailments may also have undergone more life changes as defined by the SRRS. Secondly, in prospective studies a clear trend should emerge. This trend should be that people who are more likely to become psychologically or physiologically impaired should also have greater LCU scores.

RETROSPECTIVE STUDIES

A number of writers (Bedell et al., 1977; Coates et al., 1976; Heisel, 1973; Rahe et al., 1967) have attempted to test the first hypothesis. Rahe et al., (1967) mailed the SRRS to 200 resident physicians in the Waterloo hospital system. They were also asked to list all their major health changes by year of occurrence for the previous ten years. Eighty-eight subjects completed the study and provided retrospective data which was analyzed for relationship of health changes to life changes. The values were then

summed for each year and total LCU values were plotted for each subject. The authors established an arbitrary criterion for temporal association of an illness or health change with life change events. This criterion was that a reported change in health must have occurred within a two year period following the occurrence of a cluster of life changes. This two year period was the time when the subject was considered to be at risk of becoming maladjusted after the life change clustering. The choice of two years as the at risk period poses some questions which will be discussed in a later section.

The results of the study support the first hypothesis that people who are more prone to sickness also tend to have been subjected to greater clustering of life changes. They found that of the 96 major health changes reported, 89 were associated temporally with a clustering of life changes whose values summed to at least 150 LCU per year. The study also suggests a direct relationship between magnitude of life crisis as defined by LCU scores and risk of health changes. It was found that a mild life crisis with LCU scores ranging from 150 to 199 accounted for 37 percent of all the health changes experienced by that group. Moderate life crises, defined as scores from 200 to 299 LCU accounted for 51 percent of all the health changes in that group, while major life crises having scores of over 300 LCU accounted for 79 percent of the health changes in this latter group. According to these findings, it would appear that LCU scores not only assist in predicting whether or not an illness may occur, but there is also an indication that the magnitude of the clustering

may also determine the probability of health changes.

PROSPECTIVE STUDIES

Although much work has been done utilizing some retrospective techniques, little has been done prospectively. Because of this lack of research, it is as yet premature to conclude that LCU scores will predict either physiological or psychological maladjustment. However, three studies have attempted to determine if events can predict future maladjustment (Rahe, 1970; Payne, 1975; Brown, 1972). The subjects in the Rahe endeavor consisted of 2,463 enlisted men, 96 marine enlisted men and 126 officers all stationed on three United States cruisers. The experimenter used LCU totals six months prior to going out to sea and then grouped the subjects according to their LCU totals. The first group consisted of those men who had scores in the bottom 20 percent of the distribution. The next 30 percent comprised the second group. The third group had scores making up the next 30 percent of the scores while the fourth group was comprised of the top 20 percent of the distribution. When the groups were tested for differences in the amount of illnesses that they experienced, the authors found that only two comparisons were not significant. The second group did not experience significantly more illnesses than the first group and the third group was not significantly greater than the second group.

These data suggests that the more life event changes one is

subjected to, the more likely, it is that the individual will become ill. However, when the data was analysed by a correlation test, the relationship was evident only up to 500 to 599 LCU scores. The illness rate for the subjects falling within 600 to 699 LCU was well below its projected placement. Rahe accounts for this drop by suggesting that the subjects in the latter range of scores were too few. He goes on to argue that LCU scores would be better able to predict severe illnesses more reliably than minor ones. Since most of the subjects were inflicted with only minor sicknesses, the predictive value of the SRRS was not really tapped. He concludes that if everything is taken into consideration, the LCU scores are indeed fairly good predictors of who is at risk.

Although Rahe's points are well taken, the discrepency at the most extreme range of scores should not be taken too lightly. The author should have indicated the total number of subjects in each group as well as the overall correlation in order to permit an evaluation of his arguments.

Payne (1975) arrived at similar conclusions. He investigated the relationship of life changes with lowered self-esteem and illness onset. He did so by administering the SRRS to 192 British working males ranging in age from thirty to sixty. He found that 50 percent of the subjects with LCU scores of 150 to 300 reported an illness during the following year. When the LCU scores amounted to 300 or over, the incident rate of illness jumped to 70 percent. He

further found that the higher the LCU scores, the more likely it was for the subject to have psychological problems manifesting themselves in lowered self-esteem.

Meyer (1972) attempted a similar prospective technique. He interviewed 720 adults to determine life changes in the previous year and to assess the mental status of the subjects. These people were similarly interviewed after two years and it was found that as the number of life events increased there was a corresponding deterioration of mental health. Meyer proceeded to partial out the areas of change and found a similar pattern across such life situations as marriage, work and health. These findings were also consistent across race, sex, age, marital status, religion, social class and number of people living in a household.

Although the evidence that has been presented tends to support the construct proposed by Holmes, a number of problems have been raised in the literature. These will be discussed in the next section.

CRITICISM OF THE CONSTRUCT

1. ITEM CONSTRUCTION

A major problem in the construct may lie in the items of the SRRS. Holmes and Rahe assume that the items presented are the most salient across cultures. This assumption

is not without risk since it is feasible that events that may be very stressful in certain cultural situations may not have been included in the questionnaire. It can be easily surmised for example, that an agrarian society depends for its well being on crop production. Events affecting this situation are extremely important for this population but have not been included in the scale. Zelkowitz and Longfellow (1979) suggest that if stress is to be measured in any given culture or socio-economic group, items included in the scale should be devised specifically for that population. Chiriboga (1977) addresses the issue directly. He questions whether it is more appropriate to utilize pre-set values on items of a stress scale or to utilize the subject's perception of the effect of an event. His findings support the contentions of Zelkowitz and Longfellow that the subjects' reports account for more of the variance than does a standardized rating scale.

2. PROBLEMS IN RECALL

Another problem can be seen in the retrospective studies that have been reported (Rahe et al., 1967; Payne, 1975). Rahe's preferred method of collecting data depends on the subject's ability to recall situations over a ten year period. This in itself is an extraordinary feat. Further, the assigning of a two year period as the time span when the subject is considered to be at risk is also suspect. This

time frame appears to be an extremely long period of time and one is led to wonder whether the results would not have been otherwise if this period were shortened. The Payne study suffers from similar drawbacks. He also depends on the recall ability of subjects to determine illness incidents and life events. This again should be viewed with caution.

However, in spite of the above criticisms, the importance of the findings brought forth by Rahe's study and that of Payne, should not be disregarded since similar results have been obtained when shorter time periods were utilized. Brown et al. (1968) looked at the occurrence of life stress events three weeks prior to both first and subsequent schizophrenic attacks and found that when compared to a control group, the schizophrenic group had nearly double the number of events. This study supports the findings of a previous pilot study conducted by Brown in 1960. Further, Meyer (1971, 1972) demonstrated that the greater the number of life stress events in the year prior to the interview, the greater the likelihood of the subject being psychologically impaired. In the initial study, Meyer interviewed adults to deduce the amount of life change that had occurred in the previous year. He then administered Gurin's Index of Mental Status and found a positive correlation between magnitude of life events and psychological status. The greater the life stress events the poorer the psychological status.

Although the evidence is as yet scant, there is an indication from the above studies that shortening the period after which the events have occurred also produces high correlations between the two variables. This method also minimizes the need to rely on the memory skills of the subjects. Furthermore, Coates et al. (1967) indicate that reactions to events tend to have a durational effect. They claim that the effect of an event is at a maximum level at the onset with a gradual extinction over time. When the subjects were asked to report on the effects of a particular event, a pattern emerged suggesting that deleterious effects occurred at the time of the event, but those effects were significantly reduced over the long run.

3. CONFOUNDING VARIABLES

A number of writers (Gersten et al., 1977; Meyer et al., 1972; Makosky, 1979) have recently questioned whether some of the items in the SRRS may not have resulted from pathology as opposed to causing pathology thereby confounding the results. Gersten proposes that ongoing life conditions such as socio-economic status and overall psychological stability will determine the occurrence of such discreet events as marital separation or detention in jail. The results of the Gersten et al. study indicate that ongoing stressful life situations such as ongoing family problems were more salient in predicting future pathology than merely adding discreet events.

Finally, the authors report that although events per se related to disorders, this was the case simply because the events themselves were related to some aspects of the environment conceived as stressful life conditions. After having said all this, they conclude that it can be seriously questioned whether scores based on checklists of changes are truly measuring the separate and distinct variable called "changes in life events". This for Gersten is an important question since certain demographic and parental aspects of the life situation were sufficient to decrease the strength of the set of life events scores to non-meaningful levels.

Makosky (1979) supports some of the arguments proposed by Gersten et al. She looked at both life events and life conditions and concluded that there exists little relationship between discreet life events and psychological well being.

However, in the study conducted by Meyer et al. (1972) there was an attempt to partial out all the items in the scale that may have confounded the two variables. This manipulation did not influence the results. The findings still supported the contention of Holmes that clustering of life changes affects the health of the individual. Further, there appears to be an inherent contradiction in the arguments presented by both Gersten et al. and Makosky. Both

authors purport to have eliminated items which are somehow part of the life conditions of an individual. Items such as "trouble with the law" in Makosky's study and "frequency of fighting in the home" in Gersten's study, have been eliminated because of the possible confounds that they may have added in their attempts to measure discreet life events. Both authors claim that the items included in their scales are discreet events which are not confounded with a person's overall life condition. Intuitively however, it appears more than likely that both life events and life conditions are continually interacting in such a way that each will affect the other. For this reason, it seems that the weighted inventory proposed by Holmes and Rahe is a viable one. Through its differential weighting system, and the inclusion of both discreet events such as "changes in residence" and more general events such as "major change in number of arguments with the spouse", it acknowledges both the severity of an event and the interaction of the life conditions and life events. Further, in describing life conditions one must surely indicate changes in life events.

4. DESIRABILITY/UNDESIRABILITY DIMENSION

It has been questioned whether the desirability or undesirability of an event causes stress or whether change alone is sufficient to do so. Mueller et al. (1977) reported that undesirable events are generally more highly correlated

with psychological status than are desirable events. However, the decision as to whether an event was negative was made by the respondents. Similarly, the stress values for the SRRS items were assigned by the subjects and indicated that what are supposedly positive events can indeed by perceived as producing stress. This issue has been addressed further by a number of authors (Chiriboga, 1972; Dohrenwend, 1973; Ruch, 1977).

Chiriboga addressed the issue of whether both positive and negative events produce stress leading to some form of maladjustment. Using a similarly weighted events inventory as did Holmes and Rahe, Chiriboga concluded that life events stress, irrespective of the desirability or undesirability of the events, correlated not only with self-reported physical health, but also with a variety of indicators of psychosocial functioning. In a more detailed study, Dohrenwend's (1973) results supported similar conclusions.

In this endeavor, Dohrenwend constructed four scales utilizing the SRE. Two of these scales were designed to tap the desirability/undesirability dimension. The other two scales were devised to measure change in such a way that one scale assigned values to the items as prescribed by Holmes and Rahe, while the other gave the items identical values of 1. Generally, the results indicated that the majority

of subjects with low life changes reported better health while those with high life change were less healthy. When comparisons were made within the desirability/undesirability dimension, the results were inconsistent. When each event was given a weight of 1, the undesirable events produced the higher correlation. However, when each event was weighted by social readjustment ratings, the change measure or combination of positive and negative events yielded the higher correlation. The higher correlation that Gersten's study produced with undesirable events may merely reflect the qualitative aspects of the items themselves in terms of the amount of stress or re-adjustment that the individual items produced.

Dohrenwend's contentions get support from Ruch (1977). The latter utilized the SRRS with college students as a multi-dimensional scaling device to determine which dimensions of life changes are more strongly related to maladjustment. Of the three utilized, he found that the most important one was life change as determined by Holmes and Rahe. The next most important dimension was the desirability or undesirability of an event while the area of life change was the least important. Because the Holmes and Rahe scale has qualitative aspects built in, Ruch recommends that this scale be used in future research.

SUMMARY OF CRITICISM OF THE CONSTRUCT

From the above criticisms, it appears that the major drawback in the construct arises from the contention that the items in the SRRS are the most salient events across cultures. The most that can be said about the scale is that those items included appear to generally be the most stress-producing in the population that it was derived from; that being an urban industrial society. After having made this claim, it appears that this drawback can be eliminated by including in the questionnaire the opportunity for any group under study to include other items that may be equally or more stressful to that group.

Secondly, retrospective studies demand and assume reliable memory recall. For this reason it is incumbent on the researcher to find mechanisms that will check for accuracy in recall. This can be done by either shortening the period of time that must be remembered, by utilizing records that can substantiate the data or by utilizing prospective techniques which totally eliminates the need to depend on such recall.

Thirdly, Gersten's contention that discreet events are confounded with ongoing life conditions does not appear to be a sound criticism since both variables appear to affect each other and have been included in the scale. Lazarus (1966) supports this contention since the bases of his coping theory is the proposition that discreet

events affect the ongoing life conditions which in turn affect the occurrence of discreet events.

Finally there has been much discussion as to whether desirable events should be included in a stress test. Since Holmes defines stress as any event which requires some readjustment by the individual, the inclusion of such events appears to be one of the strengths of the construct. Is there anyone who has not experienced anxiety during their wedding preparation?

REVIEW OF THE CHILDREN'S LITERATURE

As the above review of the adult literature indicates, there is reasonably strong evidence suggesting that, in adults, stressful life events may play a significant role in provoking some form of maladjustment. Although there exists a mass of studies providing empirical evidence of this relationship, still many questions remain.

In sharp contrast, there is a great paucity of evidence on the possible effects of stressful life events on children. Most refer to rather chronic and long lasting adversities such as those involved in prolonged family discord and disharmony (Filner et al., 1975), parental rejection and neglect (Douglas, 1975), or an institutional upbringing (Rutter, 1981).

Secondly, under the rather broad and general heading of "maternal deprivation" Rutter (1981) reports a number of studies

demonstrating that adverse experiences of various kinds may substantially increase the risk of psychiatric disorders in childhood.

Finally, one research area that may provide evidence for the existence of the relationship between stressful life events and maladjustment in children, is that conducted on the effects of specific traumatic events. A number of studies, (Vernon, et al., 1965; Douglas, 1975; Quinton and Rutter, 1976) suggest that a prolonged stay in hospital may result in deleterious emotional consequences. Douglas (1975) looked at the effects of hospitalization on ten year old children. He found that single hospital admissions lasting a week or less were not associated with any form of later emotional or behavior disturbance. However, he also reported that repeated hospital admissions were significantly associated with behavior disturbances as reported by teachers and by a detailed psychiatric assessment. Quinton and Rutter (1976) replicated Douglas' study and arrived at the same conclusions.

Research has also been conducted on the effects of the birth of a sibling (Moore, 1975; Dunn et al., 1981). Moore conducted a longitudinal study of London children to determine whether the birth of a brother or sister was associated with any ill-effects to older sibling. He found that fifteen percent of the population developed difficulties in the form of behavior problems as reported by parents or a deterioration of the mother-child relationship. No control group was reported however.

Similar findings were reported by Dunn et al. (1981) who conducted a study on forty, two to three year old children. They found that more than half cried more often after the birth of the sibling, a quarter of them developed sleeping difficulties, and nearly half demonstrated new toileting problems. The study however did not include a control group making it difficult to assess what proportion would have shown these changes even without the event occurring. Nevertheless, the magnitude and timing of the changes makes it highly likely that at least in part, the changes in behavior were indeed precipitated by the event.

Divorce differs from either birth of a sibling or hospitalization in that it generally takes place following a rather prolonged period of discord and disharmony. Rutter (1971, 1981) suggests that the disturbance emanating from divorce stems from such discord rather than from the separation per se. Nevertheless, a recent longitudinal study conducted by Wallerstein and Kelly (1980) clearly demonstrates that in many children, emotional disturbance tends to get worse following the divorce. The study looked at sixty families and attempted to tease out the effects of divorce on the children. Although the effects were varied, the authors found that over one third of all the children were unhappy and emotionally in need while many were failing in significant areas of their adjustment. They concluded that the circumstances associated with the divorce do constitute an additional stressor which may aggravate or precipitate emotional difficulties. This conclusion is supported by an earlier study authored by Hetherington et al. (1978) whose findings suggested that divorce may have a

negative effect on the emotional stability of the children.

The above literature provides an indication that the relationship between stress and maladjustment in children may be similar to the relationship between stress and maladjustment in adults. However, the evidence is scant and the available research is infested with poor research strategies and non-systematic definitions of stress.

More solid evidence of the similarity between adults and children is needed with respect to life events stress and how the magnitude of such stress may contribute to the onset of maladjustment in children.

One of the earliest attempts was conducted by Meyer and Haggarty (1962). They followed 100 children for a period of one year undertaking throat cultures for streptococcal every two weeks. They also had families keep a diary of upsetting events which occurred to family members as well as keeping a record of illnesses. They found that in the two weeks prior to documented streptococcal acquisition; as well as clinically recognizable upper respiratory infection, there was a rather marked increase in upsetting events.

Although Meyer and Haggarty did not stringently measure stress, they nevertheless took into consideration the potential cumulative effects of stressful situations acting together as did Holmes and Rahe.

Richman (1977) arrived at a stress score by adding all the events that had occurred during the previous year to a group of three year old children. The events included in the stress measure were those considered to be seriously stressful or threatening such as death, serious illness, birth, work, and other similar events seen in the adult literature. When he correlated the stress score with other dependent measures, he found that there was a significant relationship between it and the scores on the behavior screening questionnaire measuring the severity of behavior problems.

More recently Beautrais et al. (1982) undertook a prospective study of two, three and four year old children in New Zealand. The aim of the study was to determine the strength of the relationship between stressful life events undergone by the family and maternal reports of problem behaviors by the children in the following year. The stress measure utilized by the study was a modified version of the Holmes and Rahe SRRS utilized with adults. The results of the study clearly supports Richman's (1977) conclusions. Beautrais found that there was a significant tendency for maternal reports of child behavior problems to increase with an increased number of family life events.

Beautrais' use of the SRRS suggests that the author may have assumed that the adult literature may be useful in shedding some light on the effects of stressful life events on children.

The most promising work to date however has come from Coddington (1972). He systematically set out to adapt the concept

of the adult stress measures, the SRRS as put forth by Holmes and Rahe, for children. He initially revised the items to make them more applicable for this younger population and then looked at age, sex, race, socio-economic status and religion to establish normative LCU values that a child undergoes in one year. He found that age was the only variable that seemed to affect LCU values. It appears that as a child gets older, the more life change that child will probably experience. Because of this he devised separate questionnaires for four different age groups. The different questionnaires are applicable for pre-school aged children, elementary school aged children, junior high school aged children and senior high school aged children. This age effect may be greatly due to the fact that as a child gets older, he is subjected to a greater number and variety of life situations.

He then proceeded to set values to the items in the Children's Life Events Inventory. He sent out questionnaires to a sample of 131 teachers, 25 pediatricians and 87 mental health workers. These people were asked to rate the items in the Life Events Inventory given the arbitrary value of 500 set to the item "birth of a brother or sister". Coddington found that there was a high correlation among the three rating groups. The lowest correlation was found to be .85, occurring between pediatricians and mental health professionals.

Monaghan et al. (1979) utilized the Coddington method to develop a Children's Life Events Inventory for a British population. As did Coddington, Monaghan sent out letters with a standard set of

instructions to pediatricians, teachers and social workers to rate the items on the scale in terms of the amount of readjustment that a child has to undergo. Of the total list of items, only two were rated differently. Serious illness of a mother was rated significantly higher by social workers than by pediatricians. When ratings of the Monaghan study were compared with that of Coddington, Monaghan found that the ratings were similar although how much so was not indicated. However, he uses his results to generalize that the ratings are similar across cultures. At this stage of the development of the Children's Life Events Inventory, this conclusion appears somewhat premature.

Coddington (1973) proceeded to do a series of studies comparing different populations to determine if life event changes contribute to diseases. When he compared children inflicted with Juvenile Rheumatoid Arthritis with normal children, he found that the former had experienced significantly more life stress events in one year prior to onset of the illness than did their healthy peers. Similar findings were seen by Heisel et al. (1973) when they compared general pediatric patients with normal children. The authors found that prior to illness onset the sick children had experienced two to three times as many life changes as did healthy peers.

Bedell et al. (1977) in attempting to determine the effects of life events changes on the psychological and medical health of children found similar results as did both Heisel et al. and Coddington.

The population in this study consisted of 45 children attending a three week residential summer camp for the chronically ill. They were administered the Coddington scale and then evaluated for self-concept as well as for illness ratings. They were then divided into high and low stress groups according to a median split of the scale scores obtained from the sample. It was found that the low stress children consistently indicated significantly more positive attitudes about themselves than did the high stress children. Further, during the three weeks that the children were at camp, those who had high levels of stress experienced 69 episodes of illness as opposed to 19 for the low stress group. A similar relationship between stressful life events and maladjustment had previously been reported by Payne (1975) in a study conducted with adult subjects. He found that both physical and psychological well-being was related to the magnitude of LCU stress scores.

Boyce (1977) utilized the Coddington scale with fifty-eight children in day care and elementary school to determine if stress was associated with illness severity ratings. After one year, Boyce found that life change scores were significantly predictive of the average duration of illness in a positive direction. This compares with the Wyler (1971) study which concluded that stress correlated highly with certain diseases in the adult population.

Perhaps the most ambitious study to date attempting to determine the effects of life events stress on children was conducted

by Cohen-Sandler et al. (1982). Among other measures, this study utilized the Coddington stress measure to quantify the amount of stress that children aged five to fourteen had experienced prior to hospitalization for suicidal behaviors. The results indicated that the suicidal children had experienced an increased amount of stress during the twelve months immediately preceding admission to a hospital. This finding is consistent with that of Paykel (1974) who found similar high levels of stress in the six months preceding psychiatric admission of suicidal adults.

Gersten et al. (1977) viewed with extreme skepticism the value of utilizing a checklist of events to look for an etiological role of life events changes in physical and psychological disorders. They purpose that one of the major problems in this area of research is that most studies compare recent life change events histories between matched groups with and without specific disorders. They postulate that it would be more advantageous to compare groups of subjects who differ with respect to the nature and number of stressful life events. This approach they claim will better provide information about the magnitude of risk that illness will actually follow those events. However, when Bedell et al. (1972) used such an approach the results were in the direction suggested by Holmes.

In consideration of his above arguments, Gersten and his associates undertook a study of 1034 children aged six to eighteen from a lower socio-economic background. They controlled for degree

of psychological impairment by questioning the mothers of the subjects about their children's behavior and development. The answers were then analysed by two project psychiatrists who rated each child on a five point total impairment scale. Although they criticized the approach taken by Holmes and Rahe, the overall results support the contention that stressful life events, as conceptualized by Holmes and Rahe, contribute to maladjustment.

The above findings indicate clearly that life events stress can indeed play a major role in provoking both psychological and physiological maladjustment in children. Secondly, the similarities in the results between the few child studies and the adult literature suggests that generalizing the results from one area to another may not be presumptuous. Clearly, the evidence available in the adult literature leads one to believe that stress may play a causal role in the development of certain types of maladjustment.

SUMMARY OF RESEARCH WITH CHILDREN

The literature on the effects of life events stress on children has been directly influenced by the work of Holmes and his followers. Coddington adapted the concept for children. As did Holmes, Coddington devised the scale and then set LCU values to the items in the same manner as Holmes had done before him. Coddington found however that the amount of stress incurred by children is highly correlated with age. It appears that the older a child becomes, the

more stress he undergoes. This is probably due to the fact that as a child gets older he is exposed to a greater variety of life situations. Because of this finding, Coddington devised different scales for different age groups.

The empirical evidence to date, although scant, generally tends to support the construct. With the exception of the Gersten et al. (1977) study, which attempts to criticize the construct, life events stress as defined by Holmes correlate highly with children's maladjustment. Bedell et al. (1977) found that chronically ill children who had high levels of stress experienced significantly more episodes of illness than did similarly sick children under low stress levels. Coddington (1973) in a series of studies with children arrived at comparable results. Finally, although Gersten et al. attempted to criticize the construct, the results are consistent with the approach proposed by Holmes. Overall, this latter study also indicates that life events stress contributes to maladjustment.

Given the small amount of research conducted with children, the strength of the proposition is as yet to be decided. Although the literature available tends to support Holmes, it is necessary to expand the amount and diversity of the research since the bulk of the empirical research has been conducted by Coddington himself and his students.

COPING

Although the construct proposed by Holmes and Rahe tends

to demonstrate the existence of a relationship between life events and maladjustment, it does not account for the differential reactions to stress (Rahe, 1970; Wyler, 1971; Payne, 1975). Are these discrepancies to be explained in terms of individual differences, in terms of the nature of the maladjustment, or in terms of the inherent limitations of the construct? A partial answer to the question may be evident in the coping literature which looks at individual differences in reaction to stress.

A number of writers (Dimsdale, 1974; Lazarus, 1966) looked at people who have successfully handled very stressful situations. Dimsdale concluded that the concentration camp victims who emerged the least harmed were those that utilized certain coping strategies. Among those strategies were: 1) the ability to affiliate oneself with a group giving the individual a sense of not being alone. 2) emitting regressive behaviors such as crying which tended to attract people who were compassionate and consoling. This tended to give the individual inner strength.

Bruhn, Philips and Wolf (1972) describes an Italian-American community in Pennsylvania and looked for reasons why this specific population had such a low death rate from myocardial infarction and a very low incidence of mental health problems. The most prominant variable that seemed to intervene between stress and those forms of maladjustment was the extent of the social support system that an individual had. For example, if a man lost his job, he didn't have to worry about

paying bills since other members of the family would assist in the problem area.

Pearlin and Schooler (1978) looked at a number of stressful events, attempted to determine the coping strategies utilized and then proceeded to demonstrate which of the coping strategies were most effective in the given situations. They concluded that in the area of marriage, reflecting on a problem is more effective than emotional outbursts. Parenting becomes less stressful if the parent can make himself believe that he has a strong influence over the children. Where interpersonal family relationships are involved, stress is handled more effectively if people are committed to maintaining the relationship. Finally, if stress is generated by finances or work, it appears more advantageous for people to become disengaged and not involved in these matters. In general terms, the study suggests that those people who are free from negative attitudes towards themselves, who possess a sense that they are in control and feel good about themselves, are better copers.

Lazarus (1966) proposes a model which appears to go furthest in explaining the differential reactions to stress. According to Lazarus, stress is perceived as an ongoing transaction and relationship encompassing a whole series of stimulus-response-altered stimulus-altered response progressions. Central to this process is the way in which the individual appraises what he is experiencing and then utilizes this understanding of what is happening to shape the future course of

events. Therefore, the occurrence or anticipation of a given event as stressful generates emotional reactions because the person construes it both as important to his well being and as taxing his resources. The type of coping response made is again based on the evaluation of the best available way to achieve the outcome which is judged to be most desirable or least harmful. Coping therefore, is not merely a simple response to an event that has happened but becomes an active force in shaping what is happening and what will happen.

It makes sense therefore, to assume that the way people react to stress depends on whether or not the individual utilizes effective and healthy coping strategies. This however, does not negate Holmes' construct since regardless of coping strategies, there has consistently been a strong relationship between magnitude of stress and maladjustment of some type. Effective coping does seem to account for the differential effects of stress. Individuals with such skills appear to be less susceptible to the deleterious effects of stress. This however, is a speculative proposition since there exists no research which has looked at the Holmes' stress index in conjunction with measures of coping. Furthermore, since the results of the studies testing the Holmes' construct consistently indicate a strong relationship between the two variables, it appears that only a minority of people possess such good coping skills.

SUMMARY OF THE LITERATURE

It appears therefore, that the evidence to date generally

tends to support the proposition brought forth by Holmes. Notwithstanding methodological problems, the value of this line of research is evident. The Lazarus model of coping is also consistent with the thinking of Holmes. The issue of desirability/undesirability is dealt with since the important variable is how one perceives an event. Also, Lazarus does not tease out discreet events from ongoing life conditions. For Lazarus, as for Holmes, the two are intertwined in such a way that they constantly affect each other and determine each other. Undoubtedly, no proof has as yet been submitted that substantiates a cause and effect relationship between life event changes and psychological and physical well being. It appears from the coping literature (Craig, 1975; Horowitz, 1976; Lazarus, 1966; Lazarus, 1975; Murphy, 1974) that this relationshp may be due to the coping strategies that an individual utilizes when he is under stress. As the stress increases, more sophisticated coping strategies are required, and if they are not available, the probability increases that maladjustment will occur.

Given the bulk of literature since the advent of the SRRS, it is surprising that so little work has been done with children. At present, Coddington appears to be the leader of this trickle of research and has attempted to demonstrate some of the effects of life changes on the medical conditions of specific populations. However, few conclusions can be made as yet.

THE PRESENT EXPERIMENT

The purpose of this research was to explore whether life

events changes affect the well being of children. More specifically, the intention was to determine whether life events affect elementary school children in any predictable way in their academic performance, their behavior in school and their absenteeism rate. The following hypotheses were based upon prior research with both adults and children: 1) Children who score high on the stress measure will also perform poorly in school. 2) Children identified as being under high levels of stress will be absent from school more frequently. 3) Children identified as being under high stress will be rated as more poorly behaved than children identified as being under low levels of stress.

Generally, previous research with children tended to address the issues of how specific events affected this population (Quinton and Rutter 1976, Douglas, 1975), or how long lasting hardships affected the overall well-being of children (Felner et al. 1975; Rutter, 1981). There have been very few studies that have attempted to utilize a standardized stress measure to determine a relationship between it and specific measures of maladjustment. Those studies that have utilized such a stress measure have done so either to test for its relationship with some form of physical illness (Coddington 1973; Heisel et al. 1973) or to correlate it with a general measure of psychological well being.

In contrast, the present study utilizes a standardized measure of stress in an attempt to determine if there exists a

relationship between it and three specific measures of adjustment within a school setting.

METHOD

SUBJECTS

The entire subject population was drawn from two schools. One school, Gerald McShane Elementary, is located in the Montreal North area and is predominantly attended by children of Italian origin. The other school, Pierre de Coubertin, is located in the St. Leonard area in the Province of Quebec and is also mostly composed of students of Italian origin. Both geographic areas were considered to be middle class.

The sample population of the three grade levels were drawn as indicated in Table I.

The difference between the number of returned questionnaires and the number of subjects in each grade level, represents the number of questionnaires that were discarded because of missing data or incorrect scoring.

PROCEDURE

The sixteen teachers involved in the study were brought together in their respective schools where the author explained the nature of the study and how they were to be involved. They were also asked to perform the following tasks:

Table I

Sample Population

Grade Level	Questionnaires Distributed	Questionnaires Returned	Number of Subjects
1	115	96	80
3	152	113	96
6	173	131	113

1) To rate the academic performance of each student in their class on a scale of 1 to 10 (see Appendix I).

2) To record the number of days absent as requested in Appendix I.

3) To complete the Portland Problem Behavior Checklist (see Appendix II).

4) To distribute to their students the Children's Life Events Inventory (see Appendix III) and to instruct those students that the questionnaires were to be completed by their parents and then returned to the teacher.

5) To return the data collected on each student to the experimenter.

To facilitate the above, the experimenter had pre-coded all the forms and then pre-packaged them in such a way that the package included every form and that each form in the package had the same code. A sample package then contained the following items:

1) A standard letter to the parents describing the study, where they could address their concerns and how to go about ensuring anonymity (see Appendix IV).

2) A copy of the Children's Life Events Inventory applicable for elementary school aged children.

3) A copy of the Portland Problem Behavior Checklist.

4) A rating scale to score academic performance.

5) An indicated place for reporting the number of days absent.

The first two of the above items were enclosed in a separate envelope to be delivered by the students to their individual parents and to be returned to the teacher completed and sealed.

All of the above measures will be described in detail in the following section.

STRESS MEASURE

The parents of each student were asked to complete the Children's Life Events Inventory as adapted by Coddington (1972) for this age group. They were also asked to list other events which had caused some readjustment (see Appendix III for instructions and rated scale). The sum score on this measure represented the stress measure and was correlated with the three measures of maladjustment.

To test for malajustment, the following measures were utilized.

ACADEMIC PERFORMANCE

The teachers were asked to rate the students' academic

performance on a scale from 1 to 10 (see Appendix I). A score of 1 indicates that a student's performance was very poor while a score of 10 indicates that the student's performance was excellent. The assumption here is that the teacher who assesses the student will know him and therefore have an accurate knowledge of the student's performance in his class. This method of rating students eliminates the individual assessment criterion utilized by teachers in awarding grades for specific performance tests. The reason for the use of this measure was to determine whether life events stress has any effect on the academic performance of the children.

ABSENTEEISM

To measure absenteeism, the number of days absent was recorded (see Appendix I). The teachers were given three days to return this information to eliminate individual subject bias. If the construct is correct, it can be hypothesized that the higher the scores on the stress scale, the greater will be the absenteeism rate. This in turn will affect the academic performance of the students since a high degree of absenteeism will generally result in poor comprehension of the academic material presented in class.

BEHAVIOR PROBLEM MEASURE

To measure for the level of behavior problems, the Portland Problem Behavior Checklist (PPBC) (Waksman and Loveland, 1980) was

used (see Appendix II). This instrument is an easy to use teacher rating scale designed to provide practical information for clincial intervention purposes. Further, this instrument serves to identify, at an early age, problematic children who may need some type of professional assistance.

This type of maladjustment measure has been shown to be useful in predicting maladjustment in late childhood and early adulthood (Roff and Sells, 1968; Roff, 1972; Watt et al., 1969).

A test-retest reliability study (Waksman and Loveland, 1980) conducted on 239 students over a one month period from grades kindergarten through high school produced a correlation of .81 and individual grade coefficients ranging from .61 to .99. The PPBC was also found to have reasonable concurrent validity with a number of other measures. It correlated at the .57 with the AML Checklist (Cowan et al., 1973) which is designed to identify early school adjustment. This latter measure has been shown to be a reliable instrument that correlates well with other lengthier scales as well as a good discriminator of students with and without school adjustment problems (Cowan et al., 1973).

The PPBC also correlates (.66) with the Walker Problem Behavior Identification Checklist (Walker, 1970). This latter is a fifty item, five factor scale designed to identify elementary school aged children who appear to need psychological intervention. The

Walker Problem Behavior Identification Checklist has also been found to discriminate students who are receiving special education classes or clinical services from normal students needing no special attention.

The creators of the PPBC also attempted to demonstrate some construct validity to the scale. They had teachers re-assess 26 students after undergoing psychological treatment and found a 24% group improvement in the scores. Another 11 students demonstrated a group involvement rate of 27%.

The use of the PPBC for the present study has its value in the type of information that is provided and simple and easy to use format. The final score for each student represented the behavior problem measure and was correlated with the stress measure described above.

SUMMARY OF DESIGN

The Coddington Children's Life Events Inventory was administered to 80 first graders, 96 third graders and 113 sixth grade children. The scores on this questionnaire served as the stress measures and were correlated with three measures of maladjustment:

1. academic performance was measured by the teachers on a scale of 1 to 10.

2. the number of days absent was noted and represented the absenteeism

score.

3. the Portland Problem Behavior Checklist was completed by the teachers on each student and represented the behavioral measure.

RESULTS

To place the individual subjects within a stress level, their stress scores were divided into three groups (see Table II). The low stress group was composed of the first third of the stress scores distribution. The medium stress group incorporated the middle third of the stress scores distribution and the high stress group was made up of the remaining third of the scores. Table II summarizes the means and standard deviations within each grade and stress level.

Table III indicates the frequency of the individual stress items within each grade level. As is evident from the table and for obvious reasons, "beginning another school year" was the most frequently reported item for the entire population as well as for each of the three grade levels. Also, all three groups reported the item "mother returning to work" as the second most frequently reported item. The remaining items ranked differentially within each grade level with the exception being the six items which were ranked last in all three grade levels.

Since the design of the study was a three (stress) by three (grade) factorial with three dependent variables, a Multivariate Analysis of Variance followed by univariate tests were conducted as recommended by Hummel and Sligo (1971). Table IV summarizes the results.

Table II

Means And Standard Deviations Of The Stress Scores Within Grade And Stress Levels

GRADE	STRESS LEVEL	N	MEAN	STANDARD DEVIATION
1	Low	41	43.76	18.33
	Medium	22	107.82	22.05
	High	17	185.52	31.84
3	Low	53	45.25	21.38
	Medium	26	109.85	26.68
	High	17	187.18	47.33
6	Low	58	44.48	21.24
	Medium	36	114.67	23.33
	High	19	199.36	37.46

Table III

Item Rank Order And Frequency Count For Entire Sample And Within Grades

Item	Total Sample Frequency	Total Sample Rank	Grade 1 Frequency	Grade 1 Rank	Grade 3 Frequency	Grade 3 Rank	Grade 6 Frequency	Grade 6 Rank
Beginning another school year	289	1	80	1	96	1	113	1
Mother beginning to work	63	2	12	2	21	2	30	2
Move to a new School District	38	3	10	4.5	13	3	15	4.5
Failure of a grade in school	32	4	2	19.5	7	9	23	3
Death of a grandparent	29	5	8	6.5	6	12	15	4.5
Birth of a brother or sister	26	6.5	10	4.5	9	4	7	10.5
Loss of a job by a parent	26	6.5	11	3	5	13.5	10	6.5
Outstanding personal achievement	22	8	8	6.5	7	9	7	10.5
Decrease in number of arguments between parents	19	9	3	15.5	7	9	9	8.5
Change in parent's financial status	18	10	4	12	4	15.5	10	6.5
Decrease in number of arguments with parents	17	11	3	15.5	5	13.5	9	8.5
Increase in number of arguments between parents	16	12.5	5	9	7	9	4	15.5
Change in fathers occupation requiring absence from home	16	12.5	5	9	8	5.5	3	18
Increase in number of arguments with parents	13	14.5	3	15.5	8	5.5	2	19.5
Death of a close friend	13	14.5	3	15.5	4	15.5	6	12.5
Change in child acceptance	12	16	1	24.5	7	9	4	15.5
Brother or sister leaving home	11	17	4	12	1	21.5	6	12.5
Addition of third adult to family	9	18	5	9	0	30	4	15.5
Serious illness requiring hospitalization of parent	8	19	2	19.5	2	19	4	15.5
Serious illness requiring hospitalization of brother or sister	7	20	4	12	3	17.5	0	30.5
Becoming full fledged member of church	6	21	2	19.5	3	17.5	1	23.5

Table III (Continued)

Marital separation of parents	3	22.5	2	19.5	1	21.5	0	30.5
Death of a parent	2	24.5	1	24.5	0	30	1	23.5
Divorce of parents	2	24.5	1	24.5	0	30	4	15.5
Marriage of parent to step-parent	1	27.5	0	32.5	1	21.5	0	30.5
Suspension from school	1	27.5	0	32.5	0	30	1	23.5
Beginning School	1	27.5	0	32.5	0	30	0	30.5
Death of a brother or sister	1	27.5	1	24.5	0	30	0	30.5
Acquiring a visible deformity	1	27.5	0	32.5	1	21.5	0	30.5
Jail sentence of parent for one year or more	0	33.5	0	32.5	0	30	0	30.5
Discovery of being adopted child	0	33.5	0	32.5	0	30	0	30.5
Pregency in unwed teenage sister	0	33.5	0	32.5	0	30	0	30.5
Becoming involved with drugs or etc.	0	33.5	0	32.5	0	30	0	30.5
Jail sentence of parent for 30 days or less	0	33.5	0	32.5	0	30	0	30.5
Having a visable congenital deformity	0	33.5	0	32.5	0	30	0	30.5

Table IV

3 X 3 Multivariate Analysis Of Variance For Grade By Stress Levels

Stress Effect							
Phillais	d.f. = 6	F (approximate) = 12.92	P<.001				
Academic Performance	d.f. = 2,280	SS = 65.68	MS = 32.84	F (approximate) = 8.43	P<.001		
Absenteeism	d.f. = 2,280	SS = 72.21	MS = 36.10	F (approximate) = 2.43			
Behavior Problems	d.f. = 2,280	SS = 6066.90	MS = 3033.45	F (approximate) = 44.03	P<.001		
Grade Effect							
Phillais	d.f. = 6	F (approximate) = 5.15	P<.001				
Academic Performance	d.f. = 2,280	SS = 4.04	MS = 2.02	F (approximate) = .52			
Absenteeism	d.f. = 2,280	SS = 317.66	MS = 158.83	F (approximate) = 14.86	P<.001		
Behavior Problems	d.f. = 2,280	SS = 487.84	MS = 243.92	F (approximate) = 3.54	P<.03		
Grade By Stress Interaction Effect							
Phillais	d.f. = 12	F (approximate) = 2.63	P<.01				
Academic Performance	d.f. = 4,280	SS = 12.99	MS = 3.25	F (approximate) = .83			
Absenteeism	d.f. = 4,280	SS = 238.26	MS = 59.57	F (approximate) = 4.00	P<.01		
Behavior Problems	d.f. = 4,280	SS = 609.08	MS = 152.27	F (approximate) = 2.21			

The Phillais F test of significance was chosen because it is considered to be the most robust. This test produced significant main effects for stress ($P<.001$), for grade ($P<.001$) as well as for the grade by stress interaction ($P<.01$). Because of these significant results, univariate analyses were conducted on each dependent variable. These results are described below.

ACADEMIC PERFORMANCE

The univariate analyses conducted on the Academic Performance scores suggest that there was a significant relationship between stress and academic performance. However, there was no significant grade, nor grade by stress interaction effect on academic performance.

Given the significant stress effects, post-hoc Scheffé test at the .05 level were conducted to determine which pair-wise comparisons were instrumental in causing those effects. These latter analyses clearly indicated two significant pair-wise comparisons. There were significant differences in Academic Performance scores between subjects in the low level of stress and subjects in the high level of stress as well as between those subjects in the medium stress level and the high stress group. There were no such differences noted between the low stress level and the medium stress level groups. The observed differences were all in the direction predicted by the hypothesis. As the level of stress increased, there was also a decrease

in the Academic Performance scores.

Table V provides a summaryof the means and standard deviations of the academic performance scores within each grade level.

ABSENTEEISM

Univariate tests were also performed on the Absenteeism scores. The results pointed to a significant grade effect, a significant grade by stress interaction, but no significant stress effect.

Post-hoc Scheffé analyses at the .05 level were conducted to determine which comparisons were most responsible for the significant grade by stress interaction. Those results indicated a significant difference in mean scores between grade one students in the low stress groups and grade three students in the low stress group. The former group was significantly more absent from school than the latter group.

The post-hoc analyses conducted on the grade scores indicated only one pair-wise comparison to be significantly different. This difference was noted between studnets in grade one and students in grade six. The grade one students were absent from school significantely more often than were the grade six students.

Table V

Academic Performance Means And Standard Deviation Scores Within Grade Levels*

GRADE	STRESS LEVEL	N	MEAN	STANDARD DEVIATION
1	Low	41	6.56	1.84
	Medium	22	6.45	2.04
	High	17	5.29	2.87
3	Low	53	6.09	1.82
	Medium	26	6.12	2.34
	High	19	5.29	1.72
6	Low	58	6.69	1.89
	Medium	36	5.78	1.84
	High	19	4.95	1.77

*Academic performance was rated on a 10 point scale with 1 = "very poor", 10 = "outstanding".

Table VI provides an overall picture of the means and standard deviations of the Absenteeism scores within each grade and stress level. With the exception of grade three, there appears to be no clear pattern emerging.

BEHAVIOR PROBLEMS

Given the significant results of the multivariate analyses, univariate F tests were also performed on this latter dependent variable. Significant effects were found for both stress ($P < .001$) and grade ($P < .05$) but not for the grade by stress interaction.

The post-hoc analyses performed on the effects of stress on Behavior Problems demonstrated significant differences between all pair-wise comparisons in the hypothesized direction. Behavior Problem scores were significantly greater for the subjects in the high stress group than for the subjects in either the medium or low stress group. Similarly, the scores for the subjects in the medium stress group were significantly greater than for those in the low stress group.

The post-hoc analyses conducted to determine which pair-wise comparisons caused the significant grade effects, indicated significant differences between the scores of the grade one and grade three students. The data revealed that the grade three subjects exhibited significantly more behavior problems than did the grade one students.

Table VI

Absenteeism Means And Standard Deviation Scores

Within Grade Levels*

GRADE	STRESS LEVEL	N	MEAN	STANDARD DEVIATION
1	Low	41	5.68	4.46
	Medium	22	5.50	3.58
	High	17	4.71	3.32
3	Low	53	2.20	1.98
	Medium	26	3.23	2.22
	High	17	7.00	8.49
6	Low	58	2.81	3.80
	Medium	36	3.07	3.33
	High	19	3.03	3.56

*Absenteeism refers to the number of days during the school year that the child was not present.

Table VII suggests a clear trend within all three grades. This pattern is that there is an increase in behavior problems as the level of stress increases.

To determine the relationship between the variables, Pearson r's were performed. Table VIII indicates that there was a significant negative correlation between stress and academic performance, a significant positive correlation between stress and behavior problems but no significant correlation between stress and absenteeism. Further, there were significant negative correlations noted between academic performance and absenteeism as well as between academic performance and behavior problems.

SUMMARY

In summary, the present study investigated the relationships between stress and three variables intended to measure maladjustment: Academic Performance, Absenteeism and Behavior Problems across grades one, three and six. The multivariate analysis indicated that there was a significant stress effect, a significant grade effect and a significant grade by stress interaction effect. The univariate analysis indicated a significant effect on academic performance, as well as on behavior problems. Further, there was a significant effect of grade on absenteeism and on behavior problems. Finally, the univariate analysis indicated a significant grade by stress interaction effect on absenteeism. The correlations performed to assess the strength

Table VII

Behavior Problems Means And Standard Deviation

Scores Within Grade Levels

GRADE	STRESS LEVEL	N	MEAN	STANDARD DEVIATION
1	Low	41	5.95	9.03
	Medium	22	7.14	8.27
	High	17	12.65	10.50
3	Low	53	5.47	6.94
	Medium	26	11.50	10.78
	High	17	20.12	13.48
6	Low	58	2.48	3.52
	Medium	36	7.69	8.10
	High	19	17.42	9.16

Table VIII

Pearson r Correlation Metrix

Between All Variables

	Stress	Academic Performance	Absenteeism	Behavior Problems
Stress	1.00			
Academic Performance	-.23**	1.00		
Absenteeism	.10	-.15*	1.00	
Behavior Problems	.49**	-.50**	.11	1.00

* $P < .05$
** $P < .01$

of the relationship between the variables measuring maladjustment indicated a significant negative correlation between academic performance and absenteeism and a significant negative correlation between academic performance and behavior problems. Stress was significantly negatively correlated with Academic Performance, and significantly positively correlated with Behavior Problems.

DISCUSSION

In general, the results indicated that children with high stress scores tended to perform academically more poorly and have more behavior problems than children under low levels of stress. This finding supported other children's studies that looked at some form of psychological measure as the correlate of life events stress (Bedell et al., 1977; Richman, 1977, Filner et al., 1975; Douglas, 1975). Absenteeism did not appear to be as clearly related to stress. However, the interaction of stress and grade together did produce a significant relationship with absenteeism. It appeared that as grade increased, subjects in the lower stress levels tended to be absent less frequently.

The reason for these differential stress effects on absenteeism is unclear. It may be that absenteeism is not directly related to stress as are the other variables because it tends to be controlled and monitored by parents. The above may also reflect the tendency of adults to protect younger children more so than they do children in the higher age groups. This latter point may have translated itself into a high rate of absenteeism amongst younger children even though they did not experience higher levels of stress.

Generally, the data indicated that age was not a factor in determining the relationship between stress and academic performance

nor between stress and behavior problems. However, age did appear to influence both the absenteeism rates and the scores on the behavior problems measure. As has been previously mentioned, the younger subjects tended to be absent from school more frequently then were the older students. Conversely, the teachers reported more behavior problems for the older students than for the younger ones. This finding could have been predicted, since younger children generally tend to be easier to control and therefore less problematic.

An ANOVA conducted on the mean LCU scores indicated that there was no statistical significance among the three grade levels. Thus, there was no confirmation of Coddington's (1972) contention that as children got older, there was also an increase in the amount of stress that they had experiences. It needs to be stated however that Coddington compared the scores between pre-schoolers and elementary school aged children and between elementary and high school aged children. The present study compared the stress scores within the elementary school ages and found that there was little difference between grades for this group of students.

The results of the present study also provided a commentary on a number of studies (Rahe et al., 1967; Rahe, 1970; Payne, 1975) which suggested that physical illness or psychological maladjustment would increase in a predictable manner as the level of stress increased. In the present study the proposition held true for Behavior Problems, less so for Academic Performance and not at all for

absenteeism. This was brought forth via the Scheffé analyses conducted. These analyses indicated significant differences in behavior problems between all stress level comparisons in the direction predicted by the hypothesis. For academic performance, the scores were found to be significantly different between the subjects in the low levels of stress and those in the high levels of stress as well as the subjects in the medium level and high level. As was the case for behavior problems the academic performance comparisons were also in the predicted direction. As the level of stress increased, academic performance tended to deteriorate. However, there was no significance noted when the low level and medium level of stress were compared.

As has been stated, the construct tended to hold for both Academic Performance and Behavior Problems but not for Absenteeism. This differential effect finding parallels Wyler's (1971) observation. He noted that the vulnerability to stress was greater for some diseases than others. In this present study, stress was significantly related to only two of the measures of maladjustment.

An inspection of the raw data brought forth some interesting observations worthy of discussion. It appeared that the variable Academic Performance was not only significantly related to stress but also to Behavior Problems and Absenteeism. When the subjects scored high on Academic Performance, there was a tendency for the subjects to score low on the Behavior Problem checklist

and high on the Absenteeism measure. Pearson Product Moment Correlations substantiated statistically the above observation. It may be that academic achievement acted to lessen the effects of stress on both behavior problems and absenteeism. It appeared that better students tended to behave better and be absent from school less frequently than poorer students.

However, the relationships between academic performance and behavior problems can also be partially explained by the fact that the two measures have a common element. The item "insufficient academic achievement" is listed as a behavior problem in the PPBC and therefore may serve to strengthen the relationship between the two variables. It is the opinion of the experimenter, however, that this slight commonality is not sufficient to conclude that the two variables do not influence each other in the direction previously suggested. It may also be that the relationship between academic performance and behavior problem is in the opposite direction as that already indicated. It makes intuitive sense to suggest that children who are experiencing behavior problems may not be as capable of utilizing their cognitive abilities to perform well in their academic endeavors. Thus, it may be that the two variables interact with each other and affect each other in both directions: poor academic performance may have deleterious effects on behavior and behavior problems may serve to inhibit academic achievement.

There is also an overlap between the absenteeism measure

and the PPBC. The item "frequently absent" is considered to be a behavior problem in the PPBC and may also serve to strengthen the relationship between academic performance and absenteeism. Again, this overlap does not appear strong enough to minimize the relationship between the two variables. It can be easily hypothesized that poor academic performance may cause negative feelings about school which may result in increased absenteeism. Similarly, it is reasonable to state that increased absenteeism may cause poor knowledge of the material to be learned leading to poor academic achievement.

Interestingly, the overall mean days absent was greatest for the first grade students, next for the grade three students and lowest for the grade six students. It appeared, therefore, that parents tended to keep younger children home more frequently, strengthening the argument that parents are more protective towards younger children than they are towards older children. This makes intuitive sense since younger children need the protection and assistance of adults more so than do older ones. It may also be, however, that younger children get sick more frequently.

Another interesting observation was noted when the subjects who had extreme stress scores of 180 LCU and above were looked at. It appears that these students were subjected to more family related types of stress where there was some form of addition to or loss of a family member. Of the twenty-six subjects who reported a score of 180 LCU's or more, twenty-two of them had such a change in the family

constellation. There occurred either a death in the family, a birth, divorce or the addition of an adult family member within the household. It may be, therefore, that life events which add to the immediate family membership, such as a grandmother going to live there, or a birth in the family, may precipitate other stressful life events. This appears to be the case also with those life events, such as death or divorce, which permanently eliminate some member from the family. These are items which are also given high LCU values within the stress measure.

The above appears to be in accordance with the proposition set forth be Lazarus (1966). An event, in this case the addition or elimination of a family member, tended to have set in motion the occurrence of other events. This reflects the stimulus-response paradigm discussed by Lazarus. It may be then that when a family member leaves the household, the remaining members need to adjust to new roles and expectations. The new situation may call for someone to take on the new role of provider and breadwinner as well as establish the need to move to less expensive living accommodations. These two latter events produce stress in themselves and are a direct result of the elimination of a family member. Similarly, the addition of a family member, such as the birth of a child, may also precipitate the occurrence of other stressful events. In such a case it may be that the mother will have to terminate her employment to care for the new child which may cause a change in the family's financial situation. Again this latter situation calls for some readjustment and was

precipitated by the addition of a new family member.

It was further noted that twelve of the twenty-six subjects who scored 180 LCU and above, also reported a death in the family. This rate was dramatically higher than for the rest of the population sampled. This is a rather staggering figure. It is hoped that this result was unique to the population within this study and not a universal phenomenon. It is also hoped that any future research with elementary school aged children will also attempt to see if similar trends occur in other studies.

For obvious reasons, the item "beginning another school year" was the most often reported item in all three grades. However, the second most frequently reported item was "mother returning to work", also by all three grades. This was rather a surprise finding but in retrospect understandable when one considers the poor economic conditions that are currently afflicting the nation. Given the middle class nature of the sample, it may be that more families felt compelled to have both parents working to make ends meet. Secondly, the probable ages of the parents of the subjects fell within the formative earning years. With both parents working, they allowed themselves a greater potential to support their households in the present and perhaps build up a "nest-egg" for the future.

Although the third most frequently reported item was different for each grade, the following reflects a phenomenon that may be

a common occurrence in this parental age group. Grades one and three reported "birth of a brother or sister" as the fourth most frequent stress item. This may be due to the fact that these are child bearing years for the mothers. Further, the first graders reported "move to a new school district" just as frequently as "birth of a brother or sister" while the former item was also the fourth most frequently reported item for the grade six students. This reflects the fact that the parents belonged to an age bracket where there was an ongoing family expansion and therefore in need of larger accommodations. Further, there also tends to be an upgrading in the financial status during this age period which was reflected in the high frequency of moving, probably to bigger and better homes.

In general then, the first three most frequently reported stress items with the exception of "beginning another school year", tend to reflect the process of establishing, enlarging and economically maintaining a family in economically troubled times. The old tradition of mom staying home to raise the children did not appear evident for the population in the present study.

To strengthen the value of the results, the author attempted to overcome some of the criticisms directed at the construct. Firstly, although the same items of the stress scale were utilized as they had been constructed by Coddington (1972), the parents of the students were given the opportunity to write in any other item or items that they perceived as having caused some amount of readjustment. This

opportunity however was utilized by only two parents in grade one, one parent in grade three and two parents in grade six.

The items included by the grade one parents were that: 1) there was a serious illness of a grandparent who babysat the child; 2) the mother had returned to school.

The write-in stress items included by the parent of the student in grade three were that: 1) in the past year the child was more frightened of losing a parent; 2) in the past year, the child had become more afraid of failure.

The additional responses submitted by the parents of the grade six subjects were that: 1) there had occurred a pregnancy of a married sister; 2) in the past year, the child (female) had totally developed physically.

Given the low quantity of additional stress items included, inclusion of the few reported ones in the analysis would have made little if any difference to the results. The reasons why more items were not included may be because the scale itself was devised for a cross-cultural population as well as for different socio-economic groups. Therefore, it may be that the subjects felt no need to add events since the scale may have included all important events in their lives.

However, two other possibilities may account for the low frequency of write-in items. The first is that the people could not be bothered to include other events and secondly, because the vast majority of subjects were of Italian origin. With a mother tongue other than English, it may have been difficult for them to write in English, other significant events. This latter reason appears to be unlikely, since the questionnaires that they completed were also in English and were accurately completed. Further, a discussion with the teachers before the questionnaires were distributed indicated that most of the families either understood or had a resource nearby that understood English. The above argument is supported by the fact that English documents that had previously been distributed to the parents by the teachers were also accurately completed.

If it was really the case that the parents could not be bothered to write-in other events, then the results may indeed be distorted since potentially strong contributors to the stress scores were not included. However, given the rigorous approach utilized by Coddington to devise the scale, it appears more then likely that at least for the vast majority of the participants in this study, the scale is comprehensive enough that it includes most life events that call for some readjustment.

The other criticism levelled at the literature was the tendency of some of the authors (Rahe, 1970; Payne, 1975) to ask their subjects to recall life events over a long period of time.

This study attempted to minimize this problem by shortening the recall period to one year. This doesn't totally eliminate the problem since it may be difficult to recall clearly and precisely all events that occurred within only the twelve month time period. At times, it becomes difficult to determine whether an event occurred eleven or thirteen months ago. In general however, the ability to recall events will be much more reliable for a one year period than for a longer period of time and becomes even more so for shorter time spans.

What is of some concern to the author, is the effect of time on the individual reactions to stressful life events. Coates et al. (1976) found that reactions to events tend to have a durational effect. Those reactions tended to be most severe at the onset of the event and gradually extinguished over time. Given this, it needs to be asked whether events that happened a year ago will affect children in school today. If so, is it accurate to set LCU values equally for events that occurred a year ago as those events that occurred last week? Is the effect of stress on current functioning the same if a family member died a year ago as if such an event occurred much more recently? Although Brown et al. (1968) found the construct to apply when he utilized only three weeks as the recall period, the above questions still need some answers. It may be that stress produces a maximum effect within a specific time period and if so, it is with this understanding that future research must be conducted.

In spite of the above, this piece of research tends to

generally support the proposition brought forth by Holmes and adapted for children by Coddington. It needs to be said however, that unlike what Rahe (1967, 1970) would have us believe, this type of stress does not produce all types of maladjustment with equal strength. This study indicates that life events stress tends to have the most deleterious effects on behavior and academic performance but less so on the frequency of absenteeism. Further, the study also tends to point out that age may have a bearing on the relationship between stress and absenteeism.

In a sense, this present project may be considered a pilot study to uncover some of the possible effects of stress on elementary school age children. The results and their implications are important in our understanding of those effects. Because of this, further evidence is needed for the literature to be more convincing of those effects. To gather such evidence, the present study needs to be replicated and expanded to include other grades and other measures of maladjustment.

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Appendix I

Academic Performance Rating Scale

ACADEMIC PERFORMANCE RATING

This rating scale is designed to assess the academic performance of the students in your class. Please circle the number that you feel gives an accurate indication of this student's academic performance. In doing so, please consider that a score of 1 indicates very poor performance while a score of 10 suggests excellent academic performance.

1	2	3	4	5	6	7	8	9	10
Very Poor				Average					Excellent

Please indicate the number of days student was absent this school year

_____

Appendix II

Portland Problem Behavior Checklist

The following checklist has been developed to identify and measure the extent of problem behaviors of school aged children. Please put an "X" beside each behavior in the box that, in your estimation, best describes the individual student in question.

PROBLEMS	No Problem	Minor		Moderate		Severe
	0	1	2	3	4	5
Negative self statements (self-concept)						
Starts classwork too slowly						
Refuses to do classwork						
Insufficient independent classwork						
Homework not completed						
Not prepared for class (no materials)						
Insufficient academic achievement						
Frequently absent						
Frequently late						
Acts tired or depressed						
Excessive grooming problems						
Interferring drug abuse						
Peer rejection						
Insufficient peer interaction						
Aggressive (physical)						
Aggressive/Threats (verbal)						
Destructive						
Calls out						
Distracts Others						
Overactive						
Noncompliance (not minding)						
Negativism (Backtalking)						
Temper tantrums						
Stealing						
Rejects many school rules						
Excessive crying						
Excessive fears						
Excessive physical complaints						
Inattentive in class						
Other						

Total Score _____

Comment: _____

_____

_____

Appendix III

Coddington Children's Life Events Inventory

This questionnaire is designed to measure the amount of life changes that an elementary school person has undergone. Please put a check mark beside all of the items that have happened to your child in the past twelve months.

		LCU VALUE
1.	Birth of a brother or sister	50
2.	Death of a parent	91
3.	Mother beginning work	44
4.	Change in child's acceptance by peers	51
5.	Serious illness requiring hospitalization of brother or sister	41
6.	Jail sentence of parent for one year or more	67
7.	Marriage of parent to step-parent	65
8.	Addition of third adult to family (i.e. grandparent)	41
9.	Divorce of parents	84
10.	Serious illness requiring hospitalization of child	62
11.	Marital separation of parents	78
12.	Increase in number of arguments between parents	51
13.	Change in father's occupation requiring increased absence from home	45
14.	Suspension from school	46
15.	Increase in number of arguments with parents	47
16.	Serious illness requiring hospitalization of parent	55

		LCU VALUE
17.	Beginning another school year	27
18.	Discovery of being an adopted child	52
19.	Decrease in number of arguments between parents	25
20.	Pregnancy in unwed teenage sister	36
21.	Move to a new school district	46
22.	Death of a close friend	53
23.	Decrease in number of arguments with parents	27
24.	Becoming involved with drugs or alcohol	61
25.	Beginning school	46
26.	Becoming a full fledged member of a church	25
27.	Death of a brother or sister	68
28.	Change in parent's financial status	29
29.	Death of a grandparent	38
30.	Brother or sister leaving home	36
31.	Acquiring a visible deformity	69
32.	Outstanding personal achievement	39
33.	Jail sentence of parent for thirty days or less	44
34.	Loss of job by a parent	38
35.	Having a visible congenital deformity	60
36.	Failure of a grade in school	57

Please list any other events which you consider important enough to have caused some form of readjustment.

NOTE: If you have any concerns related to this questionnaire or any other part of this research, please contact me (Vito Facciolo) at 697-2126.