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# NC Implications of Longitudinal Studies of Delinquency for Prevention Research

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Designing effective programs for the prevention of delinquency requires a systematic study of its early and developing origins in the social structural, social adaptational, psychological, and biological arenas. Such research necessarily must not only identify "high risk" characteristics, but should also investigate why certain characteristics entail high risk. Knowing which characteristics put children at high risk is important in identifying a target population for prevention efforts. Understanding why these characteristics relate to later delinquency is useful in deciding which prevention efforts are likely to be effective. In this paper, I discuss the implications of results from the Woodlawn project (Ensminger et al. 1983; Kellam et al. 1983) and those of other longitudinal delinquency studies for the next stage in prevention research.

The major points elaborated here are: First, early aggressiveness and/or early antisocial behavior were shown in many longitudinal studies to be important antecedents to later delinquency and criminality, and a high research priority should be placed on examining the origins and ways of reducing the levels of early aggressiveness in order to study its role in the development of delinquency. Second, prevention research concerned with delinquency should simultaneously examine other adolescent outcomes, so that the specificity of antecedents to one or several outcomes can be determined. Third, as part of prevention efforts, longitudinal studies should be used to test the effects of normal events and experiences (in addition to the evaluation of prevention and intervention efforts) on future delinquency, e.g., school success or failure and family events.

### IMPORTANCE OF EARLY AGGRESSIVENESS

One of the most consistent findings in longitudinal studies of delinquency is that children who are rated as aggressive are particularly likely to become delinquent or criminal later, whether

measured by official records or by self-reports (Conger and Miller 1966; West and Farrington 1973, 1977; Lefkowitz et al. 1977; Mitchell and Rosa 1981; McCord 1983). In a review of the continuity of early antisocial behavior, Loeber (1982) showed that children who display high rates of antisocial behavior, show antisocial behavior in multiple settings, or have an early onset are particularly likely to remain antisocial over time. While aggressiveness is sometimes used to indicate assertiveness and motivation, the term as used here refers to infliction of injury or other antisocial acts.

Robins (1966), in a 30-year followup of children referred to a child guidance clinic in St. Louis, found that children referred for antisocial behavior such as truancy or disciplinary problems were much more likely to have contact as adults with the criminal justice system than either those in the control group or those referred to the child guidance clinic for other reasons. In the Woodlawn study, males rated as aggressive by first-grade teachers were more likely to report delinquent behavior as teenagers than other males (Ensminger et al. 1983). Other longitudinal studies also found that early aggressiveness, variously defined and measured, relates to later delinquency (Conger and Miller 1966; Mitchell and Rosa 1981; Lefkowitz et al. 1977; Farrington 1978; McCord 1983). Of these studies, only the Woodlawn study and the Lefkowitz et al. study included females as well as males, and interestingly, early aggressiveness by females did not relate to later self-reports of delinquency in either study.

One clear implication of these findings is that a high priority for prevention research on delinquency should be the relationship between early aggressiveness and later delinquency and/or criminality, particularly in males. Important prevention research issues are: What are effective ways of reducing levels of early aggressiveness? When early aggressiveness is identified and reduced, is the later risk of delinquency/criminal behavior lowered? What factors relate to the development of early aggression? Why is early aggression an important risk factor for certain subgroups (e.g., males) and less important for others (e.g., females)? What are the enhancing, inhibiting, or mediating conditions between early aggression and later delinquency? The answers to these questions have implications for the next stage in both prevention and prevention research and can best be answered by longitudinal studies.

Past research indicates that the interplay of biology, personality, socialization, and culture may contribute to early aggressiveness. Several studies illustrate this point and have implications for prevention research. Olweus and colleagues (Olweus et al. 1980; Olweus 1980) investigated several hypothesized causal variables of aggressiveness. One study (Olweus et al. 1980) examined relationships between testosterone level and aggressiveness in males. The results indicated that testosterone levels were

positively related to the intensity and frequency of aggressive responses to provocation and threat, but that testosterone levels did not seem related to unprovoked physical or verbal aggression. The authors concluded that there seemed to be some relationship, but the simple hypothesis of a direct relationship between testosterone levels and aggressiveness was not confirmed.

In a study of familial factors related to aggression, Olweus (1980) found that negative reactions to the child by the mother, parental permissiveness for aggression, and physical disciplinary methods were all related to the child's aggressiveness. McCord (1983) found familial factors related to the continuity of aggression from childhood to adolescence in a longitudinal study of 227 males. Mothers who were both affectionate and family leaders had sons who were much more likely to learn to control their aggressive behavior than those with mothers who were neither.

In the Woodlawn study, we found interactions between family type and the male's aggressiveness. Males from mother-father or mother-grandmother families (low-risk families) were less likely to be rated as aggressive by their first-grade teachers than from mother-alone, mother-stepfather, or mother-absent families (high-risk families). However, if a male from a low-risk family was rated as aggressive, he had a greater chance of becoming delinquent as a teenager than a teenager rated aggressive from a high-risk family (Ensminger et al. 1983).

Why should this be? The explanation may involve both the family's childrearing and something inherent in the individual. High-risk families may not be as effective in socializing their children's aggressiveness as the low-risk families. Consequently, more of the high-risk children are aggressive early and more likely to become aggressive by their teenage years.

The Olweus and McCord results indicate that certain family practices enhance or inhibit aggressiveness, while the Woodlawn data suggest that the inhibiting practices may be more prevalent in certain kinds of families. However, the Woodlawn data also imply that certain males may be especially prone to aggressiveness, and these males may be less influenced by childrearing than by some other factor. This would explain why aggressive males from low-risk families have such a high rate of later delinquency—they are aggressive in spite of the greater resources their parents have for childrearing. Children who are aggressive even though they are in situations associated with low aggressiveness may be more likely to persist in their aggressiveness than other children. A major effort in prevention research should be to identify these different subgroups for whom effective prevention strategies may differ dramatically.

Studies by Bandura (1965) suggest that training may be important in the sex differences in aggression. He found that while boys were found to be more aggressive than girls in the experimental setting, after children were offered attractive reinforcements for

aggressive behavior, the disparity in aggressiveness between boys and girls almost disappeared. These results suggest that the sex difference in real life is vulnerable to reinforcement of male and female behavior and is not a fixed characteristic. The issue of how reinforcements for aggressive behavior that exist in non-experimental settings can be reduced is potentially a very fruitful area in prevention research.

## THE STUDY OF MULTIPLE ADOLESCENT BEHAVIORS

In the past two decades, research and research funding has tended to become more and more specialized. While this has contributed a great deal of knowledge about particular problems and their symptoms, relatively little attention has been addressed to the search for commonalities in the conditions underlying a variety of problems (Kohn 1976). Adolescents experiencing one type of problem behavior are likely to be involved in others as well (Jessor et al. 1980; Jessor and Jessor 1977; Ensminger and Kane 1985). It is important to learn the extent of overlap among teenage involvement with problem behaviors and whether the same factors that lead to delinquency also lead to other behaviors such as substance use, school failure, or psychiatric symptoms. This has two important implications for prevention research on crime and delinquency.

First, many of the antecedents of delinquency may also relate to other outcomes. For example, Robins (1966, 1978) found that not only were early antisocial children more likely to be delinquent later, they were also more likely to be divorced, committed to mental hospitals, dishonorably discharged from the army, addicted to drugs, or unemployed. West and Farrington (1977) found that boys who were convicted of crimes before the age of 18 were more likely to be alcoholic, heavy smokers, drug users, unemployed, or heavy gamblers. By comparing those conditions associated with delinquency, substance use, school failure, or psychiatric symptoms, we may be able to distinguish between the specific conditions associated with delinquency and those associated with a range of adolescent behaviors.

The Woodlawn data suggest similarities in the antecedents of drug use and delinquency, but important differences occur when the outcome is psychiatric symptoms. Aggressiveness in first-grade males predicts adolescent heavy drug, alcohol, and cigarette use as well as delinquency. It does not predict these outcomes for females, nor does it predict adolescent psychiatric symptoms for males. Early shyness inhibits both substance use and delinquency, but also leads to higher anxiety levels in adolescence (Kellam et al. 1983).

Evaluations of prevention strategies that focus on only one narrow outcome may miss important effects of the prevention program. Prevention studies of a broad range of outcomes are likely to be more fruitful in both understanding the developmental course leading to various outcomes as well as determining the effectiveness of the prevention strategy. By focusing on a broad range of outcomes, unanticipated effects become more apparent. For example, in the evaluation of the Woodlawn early intervention program, we found that the association between school performance and psychiatric symptoms increased in the intervention schools. The intervention program seemed to have the unanticipated effect of heightening the importance of school task performance, thus increasing the benefits of school success but also the stress of school failure (Kellam et al. 1975). This effect would have been undetected if school success had been the only outcome measured in the evaluation. While every outcome cannot be measured in any prevention study, certainly a broader profile than is now the tradition is desirable from a research as well as a cost-effective perspective.

#### EFFECTS OF EXISTING INSTITUTIONS

Children and adolescents, more than other age groups, spend a large proportion of their time in an institution that is subject to public policy review, the education system. Longitudinal studies can examine the effects of different educational policies and structures on the course of development toward delinquent behavior. Gold (1978) concludes that the school as an institution may have a greater capacity to prevent and reduce delinquency than the other major institutions in the community, such as the family, peer group, the juvenile justice system, and the media. Glaser (1976) also emphasizes the importance of school. He suggests that the relationship between school failure and subsequent delinquency is becoming more marked because of the increasing complexity of society and the growing demand for more schooling for most types of employment.

In prevention research, these in-place systems that are subject to public policy review should not be neglected for a narrower focus on more specific programs. Longitudinal studies can examine certain events that occur in the schools to see if these effect the rate of delinquency.

Populations of children with different educational experiences can be followed longitudinally to study whether (and how) school factors influence children's behavior. Currently, there is some evidence that social and organizational characteristics of schools correlate with outcomes, after taking into account the initial differences among children admitted into different schools

(Rutter et al. 1979). Farrington (1979) investigated the effects on delinquency rate of going to different schools. Elliot (1966) found that males actually decreased their delinquency rate when they dropped out of school. Kelly (1974) found that curriculum tracking in school was strongly related to delinquency, while social class background was weakly and inconsistently related. These school factors are all somewhat malleable to social policy decisions and seem to have an impact on delinquency rates. Such variables are easy to follow in longitudinal studies; they can later be tested quasi-experimentally when and if the findings demonstrate that more direct testing is warranted. To rigorously test the hypothesis that school practices influence pupils' behaviors, longitudinal prevention studies are needed to determine whether planned change in educational practices is followed by the predicted change in pupil behavior. Such prevention research studies are now being undertaken in the Baltimore City schools by Kellam and colleagues.

Family characteristics are often cited as causally important for delinquency. While harder to manipulate than school variables from a prevention perspective, longitudinal studies provide the opportunity to explore areas of family life to uncover fruitful areas for prevention strategies. Patterson and colleagues at the Oregon Learning Center have attempted to intervene with parents of delinquent and aggressive children. Parents are helped in their methods of supervision, interaction, and control of their children (Patterson 1974, 1980; Patterson et al. 1973). The findings show big reductions in deviant behavior lasting as long as 1 year as a result of the intervention. One important reservation about the intervention is the attrition. Patterson (1980) reported that of those families who agreed to participate (not all were willing to participate), about 25 percent dropped out of the program and another 22 percent were lost to followup. This illustrates one of the problems in longitudinal studies that is compounded by combining it with prevention and intervention research. Attrition and fallout limit the validity of longitudinal research, and longitudinal prevention studies need to carefully describe the characteristics of those who are not followed or who do not agree to participate in order to assess the extent of generalizability and to identify subgroups that are particularly hard to reach with specific kinds of prevention efforts.

The work of Olweus (1980) and McCord (1983) cited earlier, social control theories (Hirschi 1969; Wiatrowski et al. 1981) and Rutter's (1971) research all suggest that parental practices influence delinquency. There is also evidence that children have effects on parents (Bell and Harper 1977). Patterson and colleagues' work emphasizes the importance of the child's role—parental actions that are effective with normal children are not effective with socially aggressive children (Patterson 1981). Longitudinal studies can help determine the causal ordering.

## SUMMARY

The findings of longitudinal studies suggest that behavior of children in first grade or earlier indicate certain children are risk for delinquency. This is despite the great span of time, events, and conditions that intervene between early childhood and mid-adolescence. From the point of view of prevention research, early predictors such as aggressiveness are important targets in the design of specific preventive intervention.

Paths leading to delinquency must be studied along with other outcomes such as substance use, psychiatric symptoms, and school achievement. Studying a profile of outcomes helps in understanding the meaning and function of the predictors.

Prevention efforts and research should be concentrated in schools, families, workplaces, and communities. These settings link individuals to the broader society, and events that take place in these social contexts are much more likely to influence delinquency than other more peripheral institutions or programs.

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## Environmental Approaches to Prevention

Abraham Wandersman, Ph.D.

Our everyday environments can affect us in large or small ways. We often take our environments for granted or try to adapt to their negative features. This article presents a brief overview of the field of environmental approaches to prevention, which looks at the effects of the physical environment and implications of these findings for preventive interventions.

Cowen (1980) provides a rationale for encouraging our interest in environmental approaches to prevention. Two major factors in mental health have stimulated primary prevention efforts:

1. The frustration and pessimism of trying to undo psychological damage once it had passed a certain critical point;
2. The costly, time-consuming, culture-bound nature of mental health's basic approaches, and their unavailability to, and ineffectiveness with, large segments of society in great need (p. 259).

Interventions in the environment can satisfy the ultimate goal of prevention which is

to engineer structures, processes, situations, events, and programs that maximally benefit, both in scope and temporal stability, the psychological adjustment, effectiveness, happiness, and coping skills of large numbers of individuals (p. 264).

### A FRAMEWORK OF ENVIRONMENTAL APPROACHES TO PREVENTION

Wandersman, Andrews, Riddle, and Fancett (1983) developed a framework of environmental approaches to prevention that:

1. Relates the physical environment to perception of the environment, coping, and effects
2. Suggests points for preventive interventions.

# Preventing Mental Disorders

## *A Research Perspective*

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