

Prenatal and Postnatal Preventive Interventions Based on Risk Factors

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Synonyms

[Prenatal intervention](#); [Prevention](#)

Overview

Research from a wide array of disciplines indicates that specific factors in a child's life are associated with an increased likelihood of delinquency and other poor outcomes. These correlates, collectively known as risk factors, operate in the multiple domains in which the child interacts including his family, schools, peers, and community. These factors have been found to operate not simply in an additive manner but instead cumulatively and interactively, thereby producing higher likelihood, severity, and frequency of negative life outcomes with the increasing numbers of risk factors the child faces. Additionally, research finds that the children from these disadvantaged households demonstrate a high and stable trajectory of disruptive and disturbing behaviors that continue and even escalate into adolescence. As many of these risk factors can be identified prenatally or early in the child's first few years of life, there is the opportunity to intervene preventively. Prevention programs seek to compensate or correct for factors placing the child's developmental course at risk by targeting the child, their caregivers, and/or their communities. This entry provides an overview of three preventive programs implemented during pregnancy, infancy, or early childhood that have been rigorously tested and found effective in lessening the likelihood of these poor outcomes for children deemed to be at high risk. Included are home visitation programs, parent

training programs, and early enriched educational programs.

Research from a wide array of disciplines shows surprising similarity in their findings regarding childhood variables associated with a higher likelihood of negative life outcomes. These variables are collectively known as risk factors and have been found to exist in the multiple domains in which a child interacts including his family, peers, school, and community.

Current research has found that many different disorders share the same risk factors. That is, predictors of any one specific negative outcome, such as delinquency, are associated with a wide array of problematic outcomes such as disruptive and defiant behavior, poor school adjustment, academic failure, drug use and alcohol abuse, mental illness, risky sexual behaviors, and suicide, among others. Importantly, these risk factors appear to operate similarly across different racial and cultural groups. Therefore, carefully and well-designed preventive programs have the potential to affect multiple health and behavioral problems simultaneously thereby proving highly cost-effective.

Many of these risk factors can be identified prenatally or early in the child's first few years of life. Longitudinal research has found several factors associated with maternal characteristics and behavior during pregnancy that are related to an increased likelihood of early childhood disruptive behaviors. These include mother's socioeconomic status, young age at first birth, low educational status, and smoking while pregnant. In the months and years following the child's birth, the parent's inability to effectively socialize has been found to be a powerful predictor of a child's long-term poor outcomes.

While research indicates that all young children engage in disruptive and physically aggressive behaviors, most children learn to control these impulses by the time they enter school. However, studies have found that a small percentage continue to demonstrate a high and stable trajectory of disruptive and disturbing behaviors that continue well into adolescence. Data from a large longitudinal study conducted in America (Campbell et al. 2006) found that

a problematic trajectory is associated with high risk for poor academic and social functioning. These results have been confirmed by data from six sites in three countries finding that disruptive behaviors in children entering school are one of the best predictors of adolescent and adult criminality, including nonviolent and violent offending (Broidy et al. 2003).

In fact, children coming from households where they have been ineffectively parented are likely to arrive at school with multiple deficits, chief among them an inability to control their behavior as indicated by impulsive, oppositional, and/or aggressive behaviors. These children will then be at high risk for poor classroom outcomes thereby increasing the likelihood that they will experience negative teacher-child interactions. Additionally, their bad behavior will alienate their peers leading to rejection by their classmates. This exclusion from normative peers will serve as another risk factor by further feeding their anger while curtailing opportunities to learn pro-social behaviors.

The escalating spiral of aggressive and aversive interactions with teachers and peers, along with the additional learning difficulties accrued as these children fall further behind, increases the likelihood that they will engage in even more disruptive and inattentive behaviors. This, in turn, makes it more likely that the child will fail at school and either drop out or be expelled. Research has found that failing to graduate exposes the child to a new array of risks outside of the school setting including unemployment, teen parenthood, low income, delinquency, drug use, and alcohol abuse. As such, a troubling school performance is both highly related to conduct problems at school entry and strongly predictive of later and more serious problematic behaviors within as well as outside of the school setting.

This “chain of cumulative continuity” (Moffitt 1993) captures the idea that with each stage the individual diminishes his probabilities of enjoying future legitimate prospects. This relationship between early disruptive behavior and a winnowing of conventional life opportunities has been found in studies using large samples in

other countries. Simply put, the child’s inability to behave pro-socially provokes dysfunctional transactions with parents, peers, and teachers which then set him upon a path of decreasing opportunities to learn to behave pro-socially. This may largely explain why studies find that correcting bad behaviors is so much more challenging than preventing them.

An understanding of risk factors has obvious implications for criminology. If an individual’s antisocial behavior is stable from preschool to adulthood, then there is the ability to look for its roots early in life and based on factors that are present before or soon after birth. In fact, this is the focus of developmental criminology – to study retrospectively and prospectively the earliest factors associated with a high risk for delinquent behavior and its continuation into adulthood. From this perspective, randomized controlled trials with long-term follow-ups embedded in evidence-based preventive interventions occurring prenatally and postnatally are the necessary next step.

As these preventive interventions are based on a risk factor approach, a description of these factors and the developmental sequence associated with these problems is provided first. General categories of preventive interventions that have been implemented prenatally and in the first few years of an individual’s life and found effective in changing these negative trajectories are then discussed followed by a brief overview of some of the most widely respected programs that serve as models in each of these categories.

Background Description

Though longitudinal studies from infancy to adolescence are rare, they demonstrate that there is a constellation of correlates associated with a child’s long-term unfavorable developmental trajectory. These include mother’s antisocial behaviors as indicated by such things as having children at a young age, achieving low educational status, and smoking while pregnant. While disruptive and aggressive behaviors are

widespread in the first few years of life, by age three or four, children are learning to regulate their behavior. For those who do not learn, their problematic behaviors serve as a risk marker for later poor outcomes.

The term prevention is used broadly to refer to a wide range of programs provided during pregnancy, infancy, and/or early childhood. Prevention programs typically seek to compensate or correct for factors placing the child at risk for any number of bad outcomes. Alternately, prevention can seek to enhance protective factors already in existence. Either way, these programs target the child, their caregivers, and/or their communities.

Prevention programs have now been implemented in countries around the world and have demonstrated both short- and long-term success in changing the developmental trajectories of those born into high-risk disadvantaged households. Unfortunately, most programs to prevent delinquency intervene only once the disruptive and physically aggressive behaviors and responses to them from parents, schools, and their communities have become entrenched making it less likely for them to succeed.

Many researchers are now finding that risk factors impacted early are more likely to be successfully modified. Recently, researchers have combined developmental studies and experimental interventions with economic modeling to analyze skill formation in young children and its relationship to life outcomes. Results indicate that achievement is determined by cognitive abilities, as well as noncognitive skills like motivation, self-control, and perseverance. These skills influence positive outcomes, such as steady employment and high income, as well as deviant behavior like delinquency, teenage pregnancies, and drug use. Researchers have further found evidence that well-designed preventive interventions can positively impact these adult outcomes thereby proving more cost effective (Cunha and Heckman 2009). These findings have led James Heckman, a Nobel laureate economist, to conclude, "In an era of tight government budgets, it is impractical to consider active investment programs for all persons. The real question is

how to use the available funds wisely. The best evidence supports the policy prescription: invest in the very young and improve basic learning and socialization skills" (Heckman 2000, 8).

The categories of the various promising single-component early prevention strategies for reducing risks and/or increasing protective factors, along with a brief description of its intervention, intended outcomes, and effectiveness, are discussed below. This includes (a) home visitation, (b) parent training, and (c) enriched early education. The next section will then provide a state-of-the-art example falling under each category.

Home Visitation. Home visitation programs typically target mothers-to-be and new mothers. They are growing in popularity and presently number in the thousands across the United States. These programs are built upon research indicating that parents play a significant role in their child's development, most especially prenatally and postnatally. Additionally, home visitation programs have found that the best way to reach disadvantaged new mothers is to bring services to them and their newborns rather than expecting that they will consistently keep office appointments.

While home visitation programs are popular, they do not represent one specific intervention. Instead, they are a strategy for providing services to mothers of young children with the home visitor fulfilling any number of roles including case manager, parent trainer, and/or family consultant. Typically their goal is to improve the child's well-being by positively affecting pregnancy outcomes and/or the mother's ability to properly parent her child. Home visitation programs vary in the staff that is used to fulfill this function. Some programs use paid volunteers, others use paraprofessionals, and a few use community health nurses.

Even as home visitation programs are growing in numbers across the world, the research on their effectiveness is inconsistent. One review of six rigorously evaluated home visitation programs found these programs to have some positive impact on the mothers (better parenting practices and improved attitudes and knowledge), but the benefits to children (in terms of their health,

development, and rates of abuse and neglect) were elusive (Gomby et al. 1999). Another review of 20 home visitation programs exclusively using nurse visitors revealed significant and positive outcomes in terms of both the child (as measured by mental development, mental health, and physical growth) and mother (as indicated by depressive symptoms, employment, education, and nutrition) (Ciliska et al. 2001). But a systematic review and meta-analysis conducted for the Cochrane Collaboration identifying 11 distinct experimental studies found no significant overall differences in terms of maternal (as indicated by depression, anxiety, stress, parenting skills, or child abuse risk) or child (as measured by preventive health-care visits, psychosocial health, language development, behavior problems, or number of accidental injuries) outcomes (Bennett et al. 2007).

It may be that who delivers the intervention or, alternately, the rigor of the methodology used to evaluate these preventive interventions, which accounts for the differences observed in the effectiveness of home visitation programs.

Parent Training. Those interventions aimed at teaching caregivers to more properly parent are generally referred to as parent training. The rationale underlying these programs is based on research indicating that antisocial youth have parents who engage in negative practices that promote children's bad behavior. Parent training assumes that if poor parenting practices have created antisocial behavior, one only needs to change the parenting style – teach the parent how to correctly supervise, monitor, reward, and non-punitively correct misbehaviors – to accomplish positive behavior changes in the child. These training programs have been applied to infants and toddlers, as well as young children and adolescents.

There are a wide array of different parent training programs though most share the following common characteristics: (a) minimal or no contact between the therapist and the child; (b) didactic instruction in social learning principles; (c) training parents to identify, define, and observe problem behaviors in their children; (d) training parents to effectively respond to their child's problematic

behaviors; and (e) providing parents with the opportunities to see and practice these parenting techniques.

Parent training is one of the most thoroughly evaluated interventions for the treatment of antisocial behavior in children and adolescents. Several of these studies have used experimental and quasi-experimental methods in their evaluations of these programs' effectiveness. In three meta-analyses of various parent training programs (Durlak and Wells 1997; Barlow 2000; Serketich and Dumas 1996) and three systematic reviews (Berkowitz and Graziano 1972; Farrington and Welsh 2003; Weisz and Simpson Gray 2008), all but one (Durlak and Wells 1997) indicated positive effects for the children of parents who received parent training versus those in the control condition who did not receive this program. Furthermore, these studies have found treatment effectiveness maintained up to 4.5 years post-intervention.

Finally, evaluation of different treatment characteristics and delivery approaches used in parent training has found that the program typically works better with parents of younger rather than older children and that therapist training and skill, as well as duration of treatment (with shorter interventions less effective), may affect treatment outcomes. There are inconsistent findings as to whether parent training works better in individual versus group sessions, with some arguing that group sessions provide the additional opportunity of receiving support from other parents.

Early Enriched Education. One of the most widely used prevention programs in the United States today is a structured and enriched educational day care or preschool for at-risk children. As has already been discussed, quite a lot is known about children at risk. Many are from families that are themselves at risk. The stressors these families face, due to social and economic disadvantage, may lead to problems in their parenting behavior. This then increases the likelihood that the child will enter school demonstrating disruptive and highly problematic behavior. A person who has not learned to control his behavior will have difficulties in the classroom setting, including

problematic relations with teachers and peers. His disruptive and inattentive behavior, along with his growing aversion for school, increases the likelihood of learning difficulties.

Additionally, because of limited interactions with the parent, the child may not have received sufficient cognitive stimulation in the early years leading to his entering school with significant deficiencies. Researchers are increasingly recognizing how critical the first few years of life are for a child's attainment of developmental milestones. So, for instance, entering school with a language deficiency leads to a greater likelihood that the child will fail in school, again placing him at greater risk for a negative school experience and, with that, yet another path towards a problematic life outcome. Given the strong relationship between cognitive and academic impairments and conduct disorder, these deficiencies become a natural target for prevention.

As with the other preventive programs already discussed, these enriched early education programs do not represent one single entity but rather should be viewed as a vehicle for delivering services to children who are at risk of arriving at school with deficits that will interrupt the learning sequence. They are typically delivered in the preschool years though there is great variety in the rigor of the program as well as its duration. Some programs are center based, others are provided out of the home, and some use a combination of the two. Similarly, many of these programs serve the child directly, while others seek to accomplish their goals by targeting the child's caregivers, and still others use both modalities. All, though, are based on research indicating that conception through the first few years of life provides the foundation for long-term physical, mental, and cognitive development. Therefore, they seek to build a strong base starting very young so as to increase the likelihood that the child will not follow a negative developmental trajectory inside as well as outside of the school setting.

Data from a number of earlier studies on enriched preschool programs found that while IQ scores and academic performance might

initially increase, this was not maintained over time. However, there were significant and positive long-term social and academic benefits to children attending these programs. And a systematic review and meta-analysis reported by the Cochrane Collaboration found that out-of-home day care for preschool children (note that this did not necessarily include an intensive educational component), singularly or in combination with an additional preventive component, had significant beneficial effects in terms of the child's IQ, school performance, and behavior (Zoritch et al. 2009). Additionally, these beneficial social and cognitive effects were more pronounced for children from high-risk families (Anderson et al. 2003).

The Abecedarian Project specifically evaluated the long-term effects of preschool education for at-risk children. In that evaluation, infants from high-risk families were randomly assigned into an intensive preschool intervention (vs. control condition) and then randomly assigned again into a school-age intervention (or control condition), thereby creating four cohorts who were followed until age 21. Findings indicated that while the school-age intervention only had weak long-term effects, the preschool treatment led to significant and long-lasting differences academically and socially for study children. Specifically, those receiving the intensive early education program had higher cognitive test scores as well as achieving higher reading and math scores in comparison to their control counterparts. Those in the early experimental intervention also attained more education, were more likely to attend a 4-year college or university, and were less likely to become teen parents (Campbell et al. 2002). Finally, while there were no significant differences in rates of employment, experimental children were more likely to be in a skilled job than those in the control condition (Clarke and Campbell 1998).

The policy implications from this review are clear and are very much in line with Heckman's recommendations. That is, we need to invest in the young with well-designed and rigorously evaluated preventive interventions that improve children's basic skills and socialization.

State of the Art

As space is limited, examples of successful programs from each of the three categories are presented below. This is followed by an example of a hybrid program combining these separate preventive intervention components. Each of the programs highlighted has been rigorously tested and found effective when delivered to high-risk young children and/or their families.

Home Visitation. David Olds' Nurse-Family Partnership (NFP) (see also <http://www.nursefamilypartnership.org/>) provides one of the most highly regarded and rigorously evaluated home visitation programs. This preventive program targets high-risk first-time mothers-to-be from the time they are in their second trimester through the child's second birthday using nurse visitors who provide frequent and regular (weekly and then biweekly) contact with the woman. NFP focuses on maximizing (1) healthy behaviors in mothers-to-be during pregnancy to increase the likelihood of a positive birth outcome, (2) sensitive and caring parenting to increase the mother-child bond and decrease the likelihood of neglect and abuse, and (3) positive life course for the mother to increase her long-term outcomes.

Olds originally tested the NFP program in Elmira, New York, using a randomized controlled trial (RCT) with a large sample of women. Results 4 years post-program completion indicated positive and significant effects for the mothers and their children. More home-visited mothers returned to and graduated from high school, demonstrated higher employment rates, had lower rates of subsequent pregnancies, were more involved with their children, and displayed improved coping around their parenting in comparison to the control women who received treatment as usual. Children from nurse-visited homes demonstrated fewer behavioral problems, lived in homes with fewer hazards, and made fewer emergency room visits in comparison to controls. Unfortunately, no significant differences emerged in terms of rates of child abuse or neglect or child's intellectual functioning (Olds et al. 1988).

Whereas the RCT in Elmira included predominantly white high-risk women living in a rural area, NFP was next tested with a largely African-American high-risk urban population in Memphis, Tennessee. As with Elmira, Olds and his colleagues found some success. Specifically, women visited by nurses had lower pregnancy-induced hypertension, fewer health-care encounters for their children due to injuries or ingestion, and a lower rate of second pregnancies. However, home-visited mothers and their children did not differ significantly from their non-visited counterparts in terms of the children's birth weight, rates of immunization, mental development, and behavioral problems or the mother's education and employment (KItzman et al. 1997).

In their latest trial conducted in Colorado, Olds tested nurse- versus paraprofessional-delivered home visitation, and both were then compared to a no-treatment control group to see if program effects would maintain when NFP was delivered by well-trained non-nurses to a disproportionately Hispanic sample. Whereas effects for women and their children who were visited by paraprofessionals were small and typically not significantly different than those for control women, those visited by nurses continued to show important differences on both maternal (fewer subsequent pregnancies, higher employment rates, and higher rates of interaction with their infants) and child (improved language and emotional development) outcomes. However, there were limitations with what NFP was able to achieve. Nurse-home-visited women and their children did not differ with controls on the mother's educational achievement and use of welfare or the children's temperament and behavioral problems (Olds et al. 2002).

Though the results across these three sites were mixed in terms of outcomes, a 15-year follow-up of the original Elmira sample showed that the children of mothers served in NFP also benefited from this program over time. Specifically, the children of women enrolled in NFP demonstrated significantly lowered rates of running away, cigarette and alcohol use, and arrests and reported having fewer lifetime sexual partners (Olds et al. 1998).

Olds' Nurse-Family Partnership (NFP) is now implemented in more than 100 sites in 31 states in the United States in addition to half a dozen sites worldwide. Today, a national NFP office handles information dissemination and ensures that there is high fidelity to the model. The largest concern with NFP to date continues to be that its effectiveness has yet to be independently evaluated against a no-treatment control group by researchers who are not connected to the program. However, an independent Dutch replication study using an experimental design is currently underway and initial results seem promising ([http://www.voorzorg.info/voorzorg/download/20120324_Factsheet_VoorZorg_mrt_2012_final\[1\].pdf](http://www.voorzorg.info/voorzorg/download/20120324_Factsheet_VoorZorg_mrt_2012_final[1].pdf)).

Parent Training. Parent-child Interaction Therapy (PCIT) (see also <http://pcit.phhp.ufl.edu/Literature.htm>) provides an excellent example of a widely used and rigorously evaluated parent training program. Developed by Sheila Eyberg, PCIT has been recommended as a best practice by several state and federal agencies and has now been implemented worldwide. PCIT was initially developed for children between the ages of 2 and 7, but recent evidence has demonstrated its efficacy with children as young as 18 months (Bagner et al. 2010). PCIT has been found to improve the quality of the parent-child relationship, aid parents in developing appropriate child management skills, and significantly decrease parenting stress (Zisser and Eyberg 2010). PCIT is comprised of two distinct phases.

In the Child-Directed Interaction (CDI) phase, the program focuses on establishing a warm relationship between the parent and child by teaching parents to follow the child's lead which helps them become more responsive to their children. It is thought that this will establish a more secure and nurturing relationship from which to move to the second phase of PCIT, the Parent-Directed Interaction (PDI). The goal of PDI is to teach the parent how to set limits, clearly communicate these limits to the child, and then consistently and firmly use discipline when the child does not comply. In both phases of PCIT, the mother is actively involved in the learning process by being

coached and provided with moment-to-moment feedback by the psychologist as she plays with her child.

Based on several randomized controlled trials, PCIT has been shown to be an effective intervention with children demonstrating disruptive behavioral problems, children with developmental disabilities, and families from racially and ethnically diverse backgrounds, among others. PCIT has also been shown to be effective in a group format provided in a primary care setting and is currently being tested with infants. A meta-analysis based on nine PCIT experimental and quasi-experimental evaluations (Thomas and Zimmer-Gembeck 2007) reported a moderate to large effect size ($d = 1.21-1.57$) leading to the conclusion that PCIT met criteria for a well-established intervention. Importantly, PCIT's effects have been found to maintain up to 6 years post-intervention (Hood and Eyberg 2003). Just as critically, PCIT has been evaluated not only by Eyberg and her colleagues but additionally by others who are not connected to the program's development.

Enriched Early Education. The Early Training Program (ETP) provides one of the first examples of this type of intervention. Begun in 1962 by Susan Gray in a rural town in Tennessee, this preventive intervention was highly influential in gaining support for programs like Head Start. In the summer of 1962, 65 disadvantaged black children (ages 3-4) were enrolled in this study and randomly assigned to either the experimental intervention – a three-summer or two-summer intensive enrichment program combined with weekly visits by a preschool teacher to the child's home to meet the parents in educating her child – or control (treatment as usual) conditions. Their results demonstrated an increase in performance scores initially with most of these differences dissipating by the time the child reached the fourth grade (Gray and Klaus 1970).

As the sample size for this and similar research on early enriched educational programs was small, and the results somewhat confusing, the data from the ETP plus ten other well-known studies were pooled to form the Consortium on Longitudinal Studies. With a fairly low attrition

rate (20%), the Consortium followed these individuals in 1975 (with ETP individuals now between 16 and 17 years of age). Results from the Consortium indicated that IQ scores increased for approximately 3–4 years after the study ended but were not maintained. However, they discovered that these programs had a significant and positive long-term impact. Specifically, the children who received the preventive intervention demonstrated reductions in both special education placement and grade retention, and they demonstrated more positive attitudes towards achievement when compared to their control counterparts (Lazar et al. 1982).

With research surfacing showing a gender gap in benefits accruing to children receiving these early enriched educational programs, the Consortium data was disaggregated to separately study program effects for males and females. Analyses revealed that while cognitive benefits faded over time, there was a clear pattern of treatment effects by gender. Specifically, girls who were exposed to the ETP showed improved rates in high school graduation, college attendance, marital rates, and overall economic well-being. These women also demonstrated lower rates of criminal behavior and drug use. There was limited evidence for positive treatment effects for the men who received this program (Anderson 2008).

Hybrid Preventive Interventions. While there are many hybrid interventions combining two or more of the previously mentioned three program types, like single-component preventive interventions, most have not been rigorously evaluated with follow-up of subjects over a lengthy period of time to validly investigate its effects. However, there are a few notable and noteworthy exceptions.

An excellent example is the Perry Preschool Project (PPP) which randomly assigned 123 disadvantaged African-American preschoolers (3–4 years of age) in Ypsilanti, Michigan, either to the control condition (treatment as usual) or to a high-quality early education program that emphasized the child's intellectual and social development. In addition to the education component, the Perry Preschool Project also provided home visitation where teachers met weekly with

parents to work with them on parenting skills. (Though the Early Training Program had a home visitation component, the preschool teachers did not work on parent training but rather attempted to get parents allied with their teaching goals.) In fact, this combination of an enriched early education for the child combined with a parent training component for the caregivers has been found to be one of the most successful models for preventive interventions.

By age 19, researchers were finding significant benefits for the Perry Preschool Project in terms of both academic and social outcomes. As with the Early Training Project, children in the experimental group originally demonstrated higher IQ scores that diminished with the ending of the program. But other results maintained and even increased over time. Children receiving the preventive intervention had fewer special education placements and improved attitudes towards schooling, better grades, increased rates of high school graduation, and more postsecondary education. Socially, these children had higher rates of employment and self-sufficiency and lower rates of welfare, self-reported misconducts, and arrests (Weikart and Schweinhart 1992).

A follow-up conducted when these individuals were 40 years of age revealed that the social benefits continued to accumulate for those attending this hybrid preventive program. Specifically, these individuals had fewer arrests (including arrests for violent crimes) and were less likely to have a history that included a jail or prison sentence. They were also more likely to have a savings account. As with the ETP, researchers noted that the Perry Preschool Project benefited girls academically and socially more so than boys and that this held true for both short- and long-term results (Schweinhart 2005).

Possible Controversies in the Literature

Most criminologists focus on adolescents or adults who are getting in trouble with the law. This seems logical as these are the individuals who, when disruptive, are perceived as a danger to the public. But prevention scientists instead

attend to infants, toddlers, and young children who, though not currently violating legal standards, are at high risk for poor outcomes. As these young children are not currently a threat to the public, given their limited physical abilities to harm others through their disruptive behaviors, some think it foolish to focus interventions on this population. But as we have seen, one of the best predictors of antisocial behavior in adolescents is a child's chronic physical aggression during the preschool years. Adding to this, evaluations of interventions implemented once bad behaviors have begun have shown limited effectiveness. In the end, therefore, criminology may find it fruitful to take a lesson from public health. They have found prevention to be more successful and cost effective than treatment.

Individuals might also be worried that prevention programs, by targeting high-risk youngsters, will negatively label these individuals early on, thereby causing the bad behaviors that it was intended to prevent. However, if these programs are offered as a way to assist parents in parenting, help build strong bonds in families, or ready a child for entrance to school, then individuals are not being labeled as predelinquents. While each of these programs has one or the other aims, we have seen through research how strengthening parenting practices or building a stronger foundation for educational success also significantly lowers the likelihood of a delinquent outcome.

Two current controversies in the criminological literature deal with the methodology that is implemented in prevention science. The first is the use of longitudinal versus cross-sectional data for testing causal hypotheses, and the second is the utilization of randomized controlled trials. Each is discussed in more detail below.

There are some who argue that longitudinal data is unnecessary, as it serves no purpose that cannot be obtained by cross-sectional data. Prevention scientists, on the other hand, argue that longitudinal studies are necessary (though not sufficient) as it allows the study of an individual's development over time. Criminologists have recently recognized the need to go beyond studying the causes of crime exclusively. Instead, they

are finding that it is more informative to study the correlates associated with onset, continuation, and desistance of crime. To do this, longitudinal data is necessary as factors associated with onset may not be the same as those correlated with continuation or desistance.

However, while it is understood that longitudinal studies can reveal correlates associated with delinquency's onset, persistence, or desistance, they cannot determine if these correlates are causative. Therefore, prevention scientists also advocate for these interventions to be embedded in randomized controlled trials and for individuals to then be followed over lengthy periods of time. This design would not only demonstrate the intervention's effect on the child's short- and long-term behavior in comparison to the control group; it also allows the testing of causal hypotheses.

The use of randomized controlled trials in criminology has also led to some suggestions that it is unethical to use human subjects to test interventions. But the fact is that these interventions are being implemented all the time – it is just that they are usually being implemented without any control and therefore their true effects cannot be determined. Others argue that it is unethical to deny individuals an intervention based on what amounts to a flip of a coin. However, this misses the point of conducting randomized controlled trials. If the full effects of the intervention were known, then there would be no need to rigorously test it. Those in prevention science note that even well-intended programs can have harmful effects, and therefore not to test these programs using the most rigorous methods possible is truly what should be thought unethical.

Conclusion

While the majority of violence “prevention” programs target adolescent youth, many of these are really corrective interventions. However, we now have a number of longitudinal studies from early childhood to adolescence that clearly point to specific risk factors associated with poor outcomes such as delinquency and crime. These

include coming from a background of disadvantage as indicated by having low socioeconomic status and a young and undereducated mother who proves to be deficient in her parenting skills. As many of these variables can be easily measured at the child's birth or shortly after, this provides the opportunity to intervene preventively in the early years. If that chance is missed, these children can be easily screened upon entrance to preschool or kindergarten as they are most likely to display highly impulsive, disruptive, and/or aggressive behaviors. A great deal of research indicates that failure to do so increases the likelihood that the individual will experience deeply troubled and troubling lives once they leave school.

Though the field is undoubtedly in its infancy, there are now specific preventive interventions that have been rigorously tested and replicated and found effective in significantly changing this negative trajectory. In this review of prenatal and postnatal single- and multiple-component preventive interventions representing a wide range of program strategies, better interventions started early in a child's life, used a risk factor approach that intervened in multiple domains of high-risk families, and then rigorously evaluated the program's effectiveness using long follow-up periods so as to assess the full range of effects. There is a need, however, for an additional suggestion. As human behavior is influenced by a multitude of factors (biology, family, school, peer, community, etc.), using a collaborative interdisciplinary approach when addressing prevention is deemed necessary to achieve diversity in expertise and breadth of knowledge. Taken together, these recommendations would go far in building the knowledge base for better addressing the social ills that our society currently faces.

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Prenatal Intervention

- Prenatal and Postnatal Preventive Interventions Based on Risk Factors

Pretrial Detention

- History of Bail

Pretrial Release

- History of Bail