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Advancing Prevention Research on Child Abuse, Youth Violence, and Domestic Violence

Emerging Strategies and Issues

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Prevention research on the related problems of child abuse, youth violence, and domestic violence has grown at an accelerating pace in recent years. In this context, a set of shared methodological issues has emerged as investigators seek to advance the interpersonal violence prevention knowledge base. This article considers some of the persistent methodological issues in these areas and points out emerging research strategies that are forging advances in garnering valid, rigorous, and useful knowledge to prevent interpersonal violence. Research issues and emerging strategies in three key domains of prevention research are considered, including complexities in validly conceptualizing and measuring varying forms of violence as specific targets for preventive intervention, research issues and strategies designed to reliably predict and identify future violence risk to be targeted by preventive intervention, and research issues and emerging strategies in the application of empirical methods to forge specific advances in preventive intervention strategies themselves.

Keywords: *violence; prevention; children; families; research methodology*

Prevention research concerning child abuse**,** youth violence, and domestic violence has accelerated recently with, for example, an 800% increase in the number of empirical articles on child and youth violence prevention occurring between the first half of the 1980s and the last half of the 1990s (Acosta, Albus, Reynolds, Spriggs, & Weist, 2001). Beyond a growing public concern and the common sensibility of intervening to halt violence before it occurs, the growth in interpersonal violence prevention research may partly be explained by the fact that interpersonal violence prevention practices, argu-

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ably more so than after-the-fact treatment, rely especially heavily on advances in empirical research. This is so for several reasons: Intervention aimed at interpersonal violence after it has taken place typically has clearer targets of concern, both in terms of people (e.g., perpetrators and victims) and goals (e.g., halting further violence, ameliorating the effects of violence in its aftermath). In contrast, the precursory conditions, events, or hazards that lead to violent behavior often are not readily apparent, and thus prevention strategies must rely on research that can help discern the appropriate goals and targets of concern. After-the-fact intervention can most commonly gauge its helpfulness in a straightforward way by visible reductions in violent behaviors or by the amelioration of the sequelae associated with violence exposure. In some contrast, prevention strategies require more deliberative study to detect preventive effects given that the aims of such efforts, by definition, are to avert behaviors that have not yet occurred and thus are less readily observable.

Empirical research has recently forged some important advances in illuminating underlying causal patterns leading to child abuse, youth violence, and domestic violence as well as in informing practitioners and policy makers about strategies that may yield preventive impact. In the face of these advances, however, researchers across the problems of child abuse, youth violence, and domestic violence have encountered some shared methodological challenges as they seek to develop useful and rigorous knowledge that can aid in the prevention of these forms of interpersonal violence. Given the importance of empirical research in advancing child, youth, and domestic violence prevention practices, this article considers some of the emerging research strategies and issues in the efforts to advance the violence prevention knowledge base. The present article focuses on three particularly important domains of concern that challenge researchers in garnering valid, rigorous, and useful information to advance these efforts. These include: (a) addressing measurement and related conceptual issues in defining "violence" as a target for preventive efforts, (b) designing research studies that advance our capacity to assess for risk and to predict future violence, and (c) applying research to forge advances in intervention practices to prevent violence. For this article, the term *prevention* is used in a straightforward sense; namely, the averting of violent events before they occur. Although the public health terminology of *primary*, *secondary*, and *tertiary* preventive intervention (Commission on Chronic Illness, 1957) (or the more recently proposed terms of *universal*, *selected*, and *indicated* prevention) (cf. Mrazek & Haggerty, 1994) plays a useful role in helping to organize preventive principles and strategies under study, it is important to underscore the distinction between the prevention of violence before it occurs (largely, primary and sec-

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ondary or universal and selected prevention), which occupies the focus of the present article, from "after-the-fact treatment" (a.k.a. tertiary/indicated prevention), which falls outside the purview of this article.

SPECIFYING AND MEASURING VIOLENCE FOR PREVENTION EFFORTS

Existing practices and policies aimed at preventing child abuse, youth violence, and domestic violence have emerged in response to a public concern for safety and well-being of individuals and families and have oftentimes resulted from public campaigns that raise awareness of the devastating realities of interpersonal violence. Although spurring significant practice and policy activities, such developments have often focused attention on the most egregious forms of interpersonal violence, contributing to a common misperception that violence is a "you-know-it-when-you-see-it" phenomenon. Although practice and policy efforts have ensued from such public campaigns, researchers have struggled with complex and thorny issues surrounding the definition and measurement of violent behavior, whether involving children, youths, domestic partners, or others (e.g., National Research Council, 1993, 2000; Reiss & Roth, 1993). In part, the struggle concerning definitional issues of violent behavior derives from the complexity of the practical applications of such definitions, once established, and the degree to which they promote or hamper violence prevention practices by identifying too inclusive or exclusive a set of problematic behaviors to be targeted for violence prevention efforts. Although a murder may achieve universal consensus that such an act is "violent," far less consensus is achievable among researchers and practitioners when considering less extreme and more commonly occurring behaviors, particularly given differing definitions and meanings of "violence" among the individuals involved, across cultures, historical epochs, and service systems (cf. Aber & Zigler, 1981; Cicchetti & Carlson, 1989; Guterman, Cameron, & Staller, 2000; Mayall & Gold, 1995; National Research Council, 1993; Saunders, 1991; Straus & Gelles, 1990). For those concerned with advancing violence prevention practices and policies, achieving a consensus on scientifically valid and practically useful definitions is particularly consequential.

From a public health standpoint, prevention policies and practices require the adoption of uniform operational definitions to mount large-scale surveillance systems that aid in determining the degree to which broad prevention strategies are helpful and from which to monitor trends and patterns in violent behavior across time, location, and context. The Centers for Disease

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Control and Prevention has pointed out the critical need to develop surveillance systems to monitor violence against women, for example, to mount effective preventive strategies on a broad scale, and this requires uniform definitions of such violent behavior (Saltzman, Fanslow, McMahon, & Shelley, 1999). Surveillance systems enable the gathering of information to shed light on such fundamental questions for prevention as identifying which women face highest risk for victimization, whether the problem is improving or worsening, and how such trends may differ from community to community (Galavotti, Saltzman, Sauter, & Sumartojo, 1997). The establishment of surveillance systems and uniform definitions of violence (on which such systems are predicated) also facilitates empirical examinations of the co-occurrence of differing types of violence and other conditions, opening opportunities to consider the degree to which they may share overlapping risk and protective factors within and between communities. Although some preliminary work has begun to establish piecemeal connections between the occurrence of child abuse, domestic violence, and youth violence (e.g., Edleson, 1999; Margolin & Gordis, 2000; Mitchell & Finkelhor, 2001), these connections have not yet been systematically examined on a broad scale across violence types, time, and contexts.

Efforts to develop uniform definitions of interpersonal violence are accompanied by complicated questions over how best to demarcate violence in relation to the precursors of violence, particularly with respect to lower level violence and/or coercive behaviors. Prevention practices, particularly those viewed as secondary or selected prevention require the identification of precursory risk elements and events that may foreshadow violent behavior that has nonetheless not yet occurred (e.g., Short et al., 2000). Evidence and theories of interpersonal violence have often pointed out that lower level violence or coercive processes may serve as "early warning" risk markers for later, more severe violence (e.g., Loeber & Hay, 1997). Given this, establishing these demarcations between violence and precursors of violence are especially consequential for secondary or selected prevention practices that must address the questions of when to intervene in relation to what kinds of behaviors.

Identifying such demarcations, however, is particularly thorny given persistently unresolved definitional issues in interpersonal violence research. First is the issue of whether threatening or coercive acts not causing observable physical injury but still causing psychological distress are to be labeled as "violent"; namely, is behavior only violent if it causes observable physical harm? For example, although verbal threats of injury or witnessed violence may cause no physical injury, they may nonetheless hold the potential to provoke feelings of fear and reactions associated with traumatization akin to

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those when physical injury is present (e.g., Margolin, 1998). If such behavior is to be defined as "violent," where is the lower threshold by which non-physically injurious threats or coercive acts are to be labeled as "violent" or "not violent"?

More broadly, further questions arise over the degree to which ongoing social processes or environmental circumstances that give rise to feelings of *danger*, whether deliberately threatening or not, can be operationally defined as "violent." As an example, although some researchers in the field of youth violence have operationally resisted labeling events such as the presence of drug dealing, weapons possession, or even the presence of abandoned buildings or darkened elevator shafts as "violence," others have argued that these events provoke feelings of danger and pervasive fear and are thereby potentially as injurious in their psychosocial consequences as discrete and deliberately injurious acts (e.g., Cooley, Turner, & Beidel, 1995; Garbarino, Kostelny, & Dubrow, 1992; Guterman et al., 2000; Horowitz, Weine, & Jekel, 1995). In an analogous way, "sexual coercion, . . . physical intimidation, restraints of normal activities or freedom, and denial of access to resources" (NIMH, 1992, p. 22) have been included within the definition of domestic violence by the Committee on Family Violence of the National Institute of Mental Health (NIMH) in 1992 given that such events, it has been argued, may more accurately reflect the experiences of victims, who often say that verbal and psychological abuse and coercion are more harmful than actual physical abuse (e.g., Herman, 1995; Walker, 1979). Debates nonetheless remain on the conceptual and operational boundaries of interpersonal violence (e.g., National Research Council, 1996), particularly between violence and precursors to violence, between physical and psychosocial damage and their relative weight, and between discrete violent events and more chronically dangerous and stressful processes and living circumstances (cf. Attar, Guerra, & Tolan, 1994; Hill & Madhere, 1996). Once more clearly drawn, such demarcations will fundamentally determine the starting points for surveillance as well as shape decisions concerning whom, when, and where to target preventive intervention. Therefore, advances in forming a scientific consensus on the boundaries of violent behavior and its related variables will propel forward more deliberate and coordinated progress in violence prevention practices and policies.

Substantially challenging researchers' attempts at operationally defining violence are the subjective processes that shape whether an act is perceived as violent. Perceptive processes and coping mechanisms play a substantial role in the degree to which an objective series of events is experienced, responded to, and reported as violent (e.g., Guterman et al., 2000; Hill & Madhere, 1996). Perceptive processes themselves are shaped by a host of mediating

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and moderating factors (Gore & Eckenrode, 1996), such as the nature of one's primary relationships and involvement in violence, cultural and community contexts, environmental stressors and social supports, or previous or ongoing experiences with violence and trauma (Fitzpatrick, 1993; Guterman & Cameron, 1997). As one example, victims of marital or partner rape, as a consequence of their victimization process, may not self-define a rape incident as violent, even if such acts result in physical injury or pain. It has been noted that in such instances, the abuse of power by the perpetrator can distort the perceptive processes of the victim, and one of the results of such may be the perpetrator's imposing onto the victim their definition of their behavior as nonviolent and/or justified (cf. DeKeseredy & Schwartz, 2001). Thus, some have pointed out that to discern the phenomenon of violence in its full depth, researchers must more frequently include and employ qualitative means, such as ethnographic or in-depth interview methods, to uncover the phenomenological experiences and processes of potential or actual victims and perpetrators (e.g., Daro, 1999)

One persistent problem posed in the use of quantitative or qualitative strategies in assessing the occurrence of violence involves self-report biases, most notably in the underreporting of violent experiences. Underreporting may derive, for example, from cognitive minimization strategies or even deliberate strategies on the part of those under study to keep violent events secret in an effort to protect against real-life retribution or future harm (Guterman & Cameron, 1997). Adolescent study respondents, for example, appear to underreport experiences with violence in accordance with the perceived degree of privacy linked with the collection of data (Turner et al., 1998). One increasingly adopted strategy to reduce such minimization biases is the use of computer assisted self-interviewing technology (CASI). CASI technology provides the respondent with questions that can be answered in a high state of privacy via laptop computers, often read to the respondent individually via earphones. This method appears to reduce minimization biases in reporting violence involvement by enhancing study respondents' perceptions of data collection privacy when compared to paper-and-pencil or face-to-face interviews (Turner et al., 1998).

Perceptive biases linked with memory recall and the reporting of violence are also inextricably tied to violence exposure itself. For example, posttraumatic stress symptoms resulting from violent victimization involve substantial memory distortions around violence experiences such as persistent intrusive reexperiencing of the event(s), amnesia, and psychic numbing (Garbarino et al., 1992; Hartman & Burgess, 1988; Siegel, 1995). As well, memory for events, even violent ones, tends to decay over time (e.g., Elliott & Anderson, 1995; Stigler, 1978), and therefore retrospective instruments

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are subject to substantial recall biases that reduce their accuracy (Eckenrode & Bolger, 1995; Hilton, Harris, & Rice, 1998; Wolfer, 1999).

Given retrospective self-report measures' multiple sources of bias, one of the most significant limitations throughout the field of interpersonal violence research is its heavy reliance on self-report measures. Although some studies (particularly those that examine macro-level trends) draw on official record data, recent observations suggest that official record data hold even greater bias and unreliability problems than self-report data, particularly with regard to more commonly occurring lower level violence that often forms the starting point for prevention concerns (cf. Finkelhor & Ormrod, 2001; Tolan & Lorion, 1988).

Prevention researchers studying varying forms of interpersonal violence will likely thus increasingly turn to alternatives to retrospective self-report measures of violence. At present, although such alternatives are infrequently reported within the violence literature per se, some strategies that appear to hold particular promise include (a) the use of prospective logs of violence experiences kept by study respondents over specified time periods—initial evidence indicates that these appear to substantially reduce memory decay problems (Wolfer, 1999); (b) within fixed-time segments, observing and coding of violent behavior or close behavioral proxies such as coercive or anti-social behaviors (e.g., Robinson & Eyberg, 1981); (c) coded observations of nonviolent or prosocial behaviors specifically hypothesized to hold an inverse relationship to violence perpetration, such as collaborative, cooperative, or responsive behaviors (i.e., observational measures of parent-infant responsiveness) (Barnard, 1986). This final avenue underscores what is often overlooked in assessing for violence prevention effects—namely, that violence prevention may not only mean the ceasing of violence but also the initiation of alternative prosocial behaviors in their stead. Although these alternative measurement strategies raise their own feasibility concerns (i.e., in additional costs and training), they nonetheless underscore the overarching need for researchers in the field to seek to build in triangulation strategies to their data collection to cross-validate, as well as to monitor bias in, violence assessments.

ADVANCING RISK AND PROTECTIVE FACTOR DESCRIPTIVE RESEARCH IN CHILD ABUSE, YOUTH VIOLENCE, AND DOMESTIC VIOLENCE PREVENTION

Despite the advances still required in defining and measuring violent behavior, researchers over approximately the last two decades have nonethe-

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less achieved major inroads in characterizing the nature of child abuse, youth violence, and domestic violence and their consequences. For the aims of prevention, the widening body of descriptive research has forged particularly important progress in identifying factors that are empirically linked with future risk for violent perpetration, aiding efforts to determine foci for prevention activities and to determine at-risk individuals and groups to whom such activities should be targeted. One notable example here is the development of risk assessment instrumentation, which aims to enhance practitioners' and policy makers' capacities to deploy and configure programs targeting individuals who face heightened risk for future violence involvement (cf. Campbell, Sharps, & Glass, 2001; Koziol-McLain, Coates, & Lowenstein, 2001). Although risk assessment strategies face substantial inherent limitations in predicting future propensity for violence given the many complex causes of violence and relatively low base rates at which violent behavior occurs (cf. Guterman, 1999), empirically derived screening activities may nonetheless likely become increasingly considered in the "front end" design of secondary prevention programs given the scarcity of resources and the goal of most judiciously deploying services to individuals who face the greatest need for service. The growing body of descriptive research has also begun to identify selected shared risk and protective factors that cut across child abuse, youth violence, and domestic violence, for example, in the presence of drug and/or alcohol use, employment and educational status, and prior history with violence. Although specific examinations of risk factors and causal processes shared across child abuse, youth violence, and domestic violence are as yet relatively rare, to the extent that such overlapping pathways become identifiable, prevention efforts may begin to consider more broadband and integrative strategies for preventive intervention.

At present, the descriptive findings on violence risk and protective factors have been predominantly derived from retrospective cross-sectional ("one shot") research designs employing samples of individuals already identified as violence involved (sometimes compared with case controls not involved in violence). Such study designs have provided us with an invaluable window through which we can begin to understand those who perpetrate violence, opening opportunities to seek to identify causes of violence, studying the problem from a particular perspective—namely, after violence has already occurred. This traditional approach to identifying risk and protective factors, although useful, nonetheless holds particularly consequential limitations for efforts to translate findings into preventive strategies and practices.

Cross-sectional research designs collecting data at a single point after violence has already occurred can help in identifying correlational associations between violence and risk factors but have been severely hampered in identi-

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fying a temporal sequence of events that precede and lead to subsequent violent behaviors. Temporal understandings of how violent behavior unfolds remain critical to enable the designing and testing of intervention strategies that seek to interrupt the causal chain of events that precede and lead to violence. To illustrate by example, although parental social isolation has been consistently identified in retrospective cross-sectional studies as a risk factor in physical child abuse (cf. Thompson, 1995), such studies lack the capacity to tease apart the causal pathways that might link social isolation and child abuse. Numerous pathways are plausible from such correlational findings, for example: (a) Increased parental social isolation may precede and directly cause heightened physical child abuse risk; (b) increased parental social isolation may precede and cause changes in some unspecified mediating factor (i.e., parental stress) that itself directly causes physical child abuse; (c) physical child abuse may precede and cause increased parental social isolation; (d) some unspecified factors may heighten both parental social isolation and physical child abuse risk simultaneously; (e) some unspecified factors (i.e., parental social skills) may interact with social isolation, and this interaction may serve to heighten physical child abuse risk; or (f) some combination of the above may explain the observed correlation between social isolation and heightened child abuse risk. In all but the first of these scenarios, preventively intervening to reduce social isolation will remain either mistargeted or imprecisely targeted, leading to unclear or ineffective outcomes in relation to child abuse risk reduction. This example, generalizable to the broad array of risk and protective factors identified from cross-sectional retrospective research on violent behavior, points out that only when the direct causal pathways to violent behavior are temporally mapped out more precisely will preventive intervention likely have a meaningful impact on the propensity to perpetrate future violence.

Although studies have increasingly applied more sophisticated statistical techniques to cross-sectional designs that allow for viewing a fuller picture of correlational factors in relation to one another (e.g., multivariate mediator and/or moderator regression analyses), such statistical techniques do not have the capacity to overcome the inherent design limitations in cross-sectional research, which largely precludes ascertaining the temporal sequence of factors leading to violent behavior.

Additional problems are raised in cross-sectional studies when all participants under study are identified perpetrators or victims, and data are collected retrospectively. Regardless of whether data are provided by a nonvictim or perpetrator source (e.g., by police, health care, or protective services professionals) or self-reported (and thus likely hold memory biases noted earlier), participants in such studies are “selected in” as a result of their

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prior violence involvement. Such a selection process may entail a host of other unknown factors entirely unrelated to, but confounding observations of, their violence involvement. To illustrate, the risk of physical child abuse attributed to minority group status reported in some studies may be due more to the relatively greater scrutiny such families face from public professionals or cultural biases in mandated reporters' own views of appropriate child rearing, rather than to any specific risk of violence that minority group membership might itself yield (e.g., Ards, Chung, & Myers, 1998). Data gathered from violence-involved samples are historically embedded in a web of factors and thus they confound our capacity to parse precursory causal events related to violence from other co-occurring but spurious factors. The problem of self-selection bias explains from a prevention perspective why extant administrative data sets (such as those from protective services, criminal justice, or health care systems), although providing important descriptive information for understanding violence after it occurs, are specifically limited in assisting us to identify critical precursory events or conditions that lead to later violence.

The next generation of interpersonal violence prevention studies, already emerging, will enable a more precise tracing of the direct pathways leading to violent behavior, overcoming many of these major limitations. These studies represent significant advances in that they (a) employ prospective and longitudinal data collection across several time points, assessing changes in risk and protective factors and occurrences of violent behaviors; and (b) enroll samples of participants that are not yet problem-identified but rather are representative of a larger population. Enrolling and following up samples of participants that are not yet involved in violence enable researchers to temporally track events, conditions, and processes that precede and directly predict later occurrences of violence. Furthermore, such prospective research designs reduce memory biases by minimizing retrospective data gathering. Longitudinal strategies are also especially well suited to aid our understanding of the interconnected elements cross-cutting varying types of violence involvement, from child abuse to youth violence and domestic violence. Growing longitudinally derived evidence, for example, is discerning what has been termed "life-course persistent" patterns of violence perpetration, whereby some violent perpetrating behavior may originate very early in childhood (often linked with early problematic parent-child interactions) and persist over time, predicting later ongoing violence involvement (cf. Dalhberg & Potter, 2001). Thus, employed in combination with increasingly accessible yet sophisticated statistical analytic strategies (such as path analysis using structural equation modeling), longitudinal research designs allow

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for far greater precision in specifically isolating the preceding causal pathways that lead to subsequent occurrences of violence.

Another key element of the next generation of studies is the accounting for the multiple levels of influence on violent behavior, including individual, family, and community levels of factors. Although at present individual studies commonly examine individual- or family-level factors, or only examine community- or macro-level factors (e.g., Garbarino & Kostelny, 1992), studies rarely yet account for macro variables and micro variables simultaneously, modeling these in the context of the same sample and study. This is particularly important given that many of the presumed causal pathways in child abuse, youth violence, and domestic violence involve multileveled transactions, macro to micro. Analytic techniques now available, such as hierarchical linear modeling (HLM) (Bryk & Raudenbush, 1992), enable researchers to simultaneously trace the unique influence of factors both between and within these levels of analysis. Given the complex set of influences, from micro to macro, as they play a role in heightening the propensity to perpetrate interpersonal violence, techniques such as HLM will no doubt become more prevalent (cf. Coulton, Korbin, & Su, 1999) and rapidly help to establish the relative importance and interrelationships among multiple levels of influence leading to violent behavior.

One of the key considerations in the next generation of interpersonal violence prevention studies that are longitudinal, population-based, and multileveled is the size and integrity of the study sample. The study of violence is inherently a highly sensitive, often stigmatized subject, and this raises challenges for researchers in addressing study enrollment and attrition, particularly when studies cover a number of data collection points that may span several years. Participant dropout from longitudinal population-based studies becomes especially problematic when the base rates of the problem under study are relatively low, as is the case with many forms of interpersonal violence. As well, substantial sample bias and loss of statistical power required to find study effects can become introduced as subjects decline study enrollment or drop out over time, and such becomes especially troublesome if the factors influencing refusal and dropout are linked with violence perpetration, a plausible prospect given that providing data on personal experiences with violence may raise highly difficult reactions. Increasingly, however, advances in both design strategies and statistical techniques are enabling researchers to minimize or compensate for the problem of incomplete data, including the conducting of nonrespondent studies, employing data weights that adjust for nonrepresentativeness, or multiple imputation to infer missed data values (cf. Brown, 1990; Levy & Lemeshow, 1999; Little & Schenker, 1995; Prinz et al., 2001).

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In summarizing some of the emerging research strategies to advance descriptive knowledge about risk and protective factors for preventing child abuse, youth violence, and domestic violence, what is necessary is to move beyond a disparate collection of studies identifying single or subsets of correlational variables associated with violence perpetration toward comprehensive modeling of behavioral trajectories over time, from early childhood, taking account of the multiple contexts in which individuals live and in ways that more precisely isolate causal pathways toward violence. Study designs such as these have emerged in just the last several years (Dodge, 2001), including the multisite LONGSCAN study (http://www.ndacan.cornell.edu/ndacan/Documentation/87/Dataset_087_LONGSCAN_Guide_10-26-2001.htm) and the Fragile Families study component examining the precursors of early childhood abuse and neglect (Paxson, Waldfogel, Guterman, Brooks-Gunn, & Berlin, 1999).

ADVANCING PREVENTIVE INTERVENTION RESEARCH ON CHILD ABUSE, YOUTH VIOLENCE, AND DOMESTIC VIOLENCE

Although an empirically derived picture of the pathways to violent behavior will provide a clear picture from which to derive effective strategies that interrupt the chain of events leading to violence, the real world urgency of the problems of child abuse, youth violence, and domestic violence has led to swift practical efforts to address these problems, apart from the present state of the science. The public resources that have been made available for violence prevention have often been quickly deployed to programs and services without an adequate scientific infrastructure in place either to reliably guide the design of such programs or to evaluate their effectiveness.

In the face of this urgency and the scarcity of resources available for prevention, an inherent tension has arisen between on-the-ground practices and research in interpersonal violence prevention, often portrayed as a "gap" or even a chasm that needs bridging in order to mount effective intervention strategies. From a practice standpoint, intervention research activities may be viewed by some as too removed and irrelevant to the exigencies of practice, too often focused on deriving nomothetic principles that do not clearly guide specific practice situations with specific individuals or families facing unique circumstances (Daro, 1999). As well, intervention research activities may be viewed by some practitioners as too cumbersome, expensive, and protracted given the immediate and onerous demands for service. Research activities involving data gathering and record keeping may be viewed as at odds with

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the urgent imperatives of addressing the pressing needs of those at-risk (e.g., Edleson & Bible, 2001). On the other hand, from a research standpoint, some have viewed violence prevention practices as akin to the patenting of medicines in the early 1900s, whereby successes are judged by endorsements and word of mouth rather than by scientific evidence to establish their efficacy (Tolan & Brown, 1998). These tensions between prevention practice and research, although sometimes resulting in opposing points of view over the same concern, can also be viewed as instilling healthy and productive pressures in both directions: For researchers, such pressures mandate that research activities ultimately should be "in the service of service" and that their findings should be expedited to practitioners and policy makers, accessible, useful, and flexible. For practitioners and policy makers, they mandate that their real world strategies are rigorously grounded, optimally evaluated in an objective fashion, providing greater accountability to the public and target recipients.

One common activity around which practitioners and researchers often jointly focus their efforts is the evaluation of violence prevention interventions and their outcomes. Evaluation research activities hold the potential to achieve several differing aims: to provide specific, tailored feedback to programs to enhance their services; to inform a broader audience about the results of an intervention; and to encourage the spreading of local intervention successes to other settings. A range of evaluation research methods are available for programs that can enable the garnering of specific feedback to improve services, including single-case evaluation methods, follow-up study methods, and qualitative research methods that may allow for systematic and in-depth information gathering. If programs are to provide useful information for the wider violence prevention agenda and propel broader changes in the field, however, it has been acknowledged that programs must be evaluated within certain standards. For example, the Committee on the Assessment of Family Violence Interventions of the National Research Council has recommended that service programs minimally adhere to several key principles in evaluating their programs to enable their findings to be translatable to other settings. These include: (a) that intervention programs be "mature enough" to warrant evaluation, including adequate grounding in descriptive studies indicating that the program can be implemented, attracting an adequate client base; (b) that interventions be distinct enough from other services so that they can be evaluated apart from these other services; (c) that service providers collaborate with researchers to set up an adequate data system for careful evaluation purposes; (d) that outcome measures be adequate to assess changes over time in relation to the service program; and (e) that

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adequate time and resources be in place to allow for a careful evaluation of the program (Chalk & King, 1998).

Evaluation research activities that assess the helpfulness of an intervention after it has been designed and delivered play just one part in the larger preventive intervention research enterprise aiming for broad knowledge development and intervention dissemination. The Committee on Prevention of Mental Disorders at the Institute of Medicine has put forth a more comprehensive "cycle of preventive intervention research" that includes evaluation research activities as only one phase of a more systematic series of steps in the broader preventive intervention agenda (Committee on Prevention of Mental Disorders, 1994). From this model, preventive intervention research proceeds in several identifiable iterative phases, building on one another. These include:

1. Identifying the nature of the problem through epidemiological work,
2. Specifying and clarifying the risk and protective factors linked with the problem,
3. Designing and then pilot testing interventions that specifically target risk and protective factors identified,
4. Conducting clinical efficacy trials that evaluate the effectiveness of an intervention under highly controlled conditions, and
5. Facilitating large-scale implementation and diffusion of programs receiving empirical support of their efficacy in varying community settings and evaluating broad effectiveness across these settings (Committee on Prevention of Mental Disorders, 1994).

From this model, evaluation research takes place only after precursory descriptive research, pilot testing, development, and an initial efficacy study has been conducted.

As noted, the role of descriptive research in identifying the varying manifestations of interpersonal violence and the associated risk and protective factors has been well acknowledged. However, the process of translating such knowledge into an intervention design and the piloting of new preventive intervention models has until very recently remained a highly underdeveloped and underreported activity as part of the preventive research cycle. This may be due in part to pressures inherent in the process of knowledge dissemination through scholarly publications, which typically requires large enough samples to report statistically significant effects, fixed research protocols that do not shift during the course of a study, and data on specified outcomes of interest for publication—each of which is de-emphasized during the designing and pilot testing phases of developing a preventive intervention. As well, research funders may be less familiar with the activities

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entailed in such "front-end" intervention development activities, in which empirical outcomes are de-emphasized and the resulting real world applications are still evolving. By its nature, the pilot-testing phase of innovative prevention strategies often requires an iterative process of trial, redesigning, and retrial to reach an optimal intervention strategy and clearly established intervention protocol, ready for outcome study. Despite this, it remains hard to imagine the advance of effective preventive intervention knowledge without the careful design and pilot testing necessary to translate risk and protective factor descriptive knowledge into clear prescriptive practices, before subjecting them to a highly controlled and expensive efficacy trial. The need to conduct such pilot and developmental work prior to outcome evaluation activities is becoming better recognized, for example, as evidenced by newer grant funding programs, such as the exploratory/developmental grant mechanism or "R-21" at the National Institutes of Health. Intervention design and pilot work, nonetheless, remains highly underacknowledged in the scientific literature for its contributions to preventive intervention knowledge development, findings of which often remain wholly unpublished or summarized only in grant proposals, where they will have little timely impact on other preventive intervention researchers.

In some contrast to the relative paucity of attention to pilot and developmental stages of preventive intervention research, the recent growth in findings from preventive clinical efficacy trials related to child abuse, youth violence, and domestic violence is encouraging (cf. Guterman, 2000; Kellermann, Fuqua-Whitley, Rivara, & Mercy, 1998; Wekerle & Wolfe, 1999). The growing availability of such information on interventions that hold replicable procedures across settings allows practitioners the ability to choose and implement intervention strategies that have undergone rigorous empirical scrutiny and have demonstrated their capacity (or lack thereof) to reduce violence risk. Although this growing body of knowledge provides some guidance regarding strategies likely to be efficacious in violence prevention for the short term, the broad majority of clinical efficacy trials employs relatively short follow-up periods, typically not extending beyond 1 or 2 years after the intervention. This is a particularly consequential limitation for those considering the interconnectedness of varying violence forms, from child abuse to youth and domestic violence, given that these cover a lengthy developmental span. Thus, as a parallel to the needs in descriptive violence prevention research, one clearly important horizon in violence preventive intervention research is the employment of lengthier follow-up periods postintervention.

One especially exciting example of the potential contribution that extending follow-up periods in intervention trials can make comes from ongoing

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work reported from the Prenatal/Early Infancy Nurse Home Visitation trial conducted in Elmira, New York, reported by David Olds and colleagues (cf. Olds et al., 1998, 1999). This set of findings, reported through 15 years of follow-up, has not only shown the efficacy of an early home visitation program on child abuse and neglect prevention through the span of childhood, it has also shown that unmarried low socioeconomic status mothers receiving the intervention reported lessened criminal involvement and problems with substance or alcohol abuse at a 15-year follow-up. Furthermore, at this follow-up, the children of mothers receiving the intervention showed a host of significant reductions in behavior problems linked with early childhood abuse and neglect and later youth violence perpetration, including fewer arrests, fewer criminal convictions, fewer incidents of running away, and lessened drug involvement (Olds et al., 1998). Although this study did not originally target these youth-violence-related outcomes later in life, the findings from this study underscores the interconnectedness of early violence exposure and later violent behavior and, perhaps more important, offers empirical evidence pointing out the exciting possibility that very early intervention can significantly alter long-term developmental trajectories away from both early childhood abuse and later life violence involvement.

The growing knowledge base stemming from clinical efficacy trials forms a key element in a larger sea change in social and medical interventions more broadly, frequently labeled the "evidence-based practices" movement. Undergirding this now worldwide trend is the notion that human service and health care practitioners stand their best chances of successfully intervening when they use strategies that have withstood the scrutiny of rigorous empirical testing. A corollary to this is the notion that such empirical knowledge is best derived from carefully executed clinical efficacy trials, the findings of which can be distilled and made readily accessible to practitioners. Several unmistakable and important recent developments on this front will no doubt have major implications for guiding violence prevention practices into the future.

First is the "practice guidelines" movement, which brings together researchers and expert practitioners to establish and make readily available to practitioners sets of intervention guidelines drawn from efficacy studies when available or, when not yet available, from expert consensus. A number of these guideline documents have already been developed for interpersonal-violence-related interventions (cf. Foa, Davidson, & Frances, 1999) and are being made readily available through publicly accessible Internet sites online, for example, via the National Guidelines Clearinghouse (http://www.guidelines.gov/). Guidelines specific to violence prevention activities will no doubt become increasingly available via these venues.

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A second major trend is the increasing emergence of meta-analytic studies that apply quantitative techniques to aggregate findings across a set of outcome studies for the purposes of synthesizing a large body of empirical evidence. The findings of meta-analyses can be summarized and provide the practitioner with a kind of executive summary of the trends available in the extant research, distilled in a way that allows the practitioner to assess the degree to which a specific intervention strategy is likely to have an empirically noticeable impact. Some meta-analyses are conducted to allow comparisons of varying intervention strategies, providing the practitioner the ability to consider which strategy has received greater empirical support in leveraging preventive benefit (e.g., Guterman, 1999; Layzer, Goodson, Bernstein, & Price, 2001). A second benefit of meta-analytic findings is that aggregating findings across studies enables practitioners to assess findings across communities and contexts, thereby reducing reliance for decision making about intervention strategies on any single study (which may hold unique sample characteristics or methodological limitations). There has been a notable increase in the use of meta-analysis in the preventive intervention field, and this is likely to grow in tandem with the growing array of clinical efficacy studies appearing in the research literature.

One of the most relevant recent developments in the meta-analysis arena for practice purposes is the advent of meta-analytic summaries made available online for immediate use, conducted by international teams of researchers (known as the "Cochrane Collaboration" for medical interventions, and the "Campbell Collaboration" for social interventions). Here, practitioners and policy makers are beginning to have at their fingertips exhaustively conducted summaries of entire bodies of clinical efficacy studies and the reported outcomes concerning a wide array of intervention areas, including for specific types of violence prevention (cf. Hodnett & Roberts, 1999 or http://www.thecommunityguide.org/home_f.html from the Centers for Disease Control and Prevention). These summaries can be especially helpful from a policy-making standpoint, particularly given that randomized trials of large-scale policy initiatives are rarely realistic.

The important progress being forged in clinical efficacy research has been enabled by increased funding and the growing sophistication and accessibility of research strategies and data analytic techniques to advance the study of violence prevention-related outcomes, particularly with respect to clinical trials. At the same time, increasingly emerging is concern for process and context variables in intervention research that do not lend themselves as easily to straightforward randomized clinical trial designs. Such process issues as engagement and the development of a clinical alliance between program participants and service providers (e.g., McCurdy & Daro, 2001; Tolan,

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Hanish, McKay, & Dickey, 2002), the fidelity of an intervention (i.e., the degree to which an intervention is implemented as originally designed and planned), the training and skills of service providers, or the flexibility of an intervention to fit and optimally address varying community conditions and case-level needs—these remain troublesome, persistent, and underexplored considerations in advancing the knowledge base so that the findings from outcome studies are rigorous, readily adoptable, and adaptable to specific contexts (cf. National Advisory Mental Health Council Workgroup on Mental Disorders Prevention Research, 2001). Questions persist, such as: How can a preventive intervention with demonstrated efficacy within one community niche be effectively adapted and translated to a new community within a different service system, target population, and service providers? As well, preventive programs continue to face persistent challenges in enrolling and retaining individuals and families who may face the greatest risk for future violence involvement, raising a host of questions about the generalizability of findings across contexts and particularly the appropriateness and fit of such services for individuals or families who may face the greatest need or risk. Our empirical knowledge regarding how to voluntarily engage fathers or male companions in violence prevention programs, for example, remains nascent, and yet it is clear that such players hold a central role in the risk equation. Thus, a number of critical unknowns with respect to intervention processes are just beginning to receive the necessary attention to maximize the usefulness of the information emerging from clinical efficacy trials (cf. McKay, Stoewe, McCadam, & Gonzales, 1998; Prinz et al., 2001).

CONCLUSION

It is clear that recent empirical advances have been forged concerning the prevention of child abuse, youth violence, and domestic violence. Within each of these forms of violence, prevention strategies are increasingly acknowledged as central to achieve long-lasting and meaningful progress in reducing the levels of violence within the broader society. Although increasing specificity and specialization has formed the traditional approach of scholars in violence research, as in other areas of social science, it is likely that integrative research studies, particularly those that can successfully carry out longitudinal data gathering, will yet uncover shared risk and protective elements across child abuse, youth violence, and domestic violence. The degree to which intervention researchers can locate these shared risk and protective factors across varying forms of interpersonal violence and then translate these into effective practice principles will significantly determine the

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degree to which the promise of prevention becomes realized—namely, to avert interpersonal violence before it ever has a chance to erupt.

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