Prev Sci (2014) 15 (Suppl 1):S84–S86
DOI 10.1007/s11121-013-0422-6

Supplemental Issue on Does Early Intervention Prevent Health-Risking Sexual Behaviors Related to HIV/AIDS: Commentary on Effects

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Published online: 24 July 2013

This Supplemental Issue of *Prevention Science* investigates the potential effects of early prevention intervention on health-risking sexual risk behaviors (HSRB) in adolescence and adulthood. These interventions were designed to address risk and protective factors associated with the development of substance use and/or psychiatric disorders and were administered in childhood or early adolescence, in school and/or family settings. Early prevention intervention previously has been associated with diminished prevalence for substance use, psychiatric disorder, and other problem behaviors (e.g., smoking, criminal involvement) by adolescence or adulthood (O'Connell et al. 2009).

Research related to HRSB and that related to the early prevention intervention differ in important ways that receive limited discussion in the papers. Etiology and prevention research related to substance use and psychiatric disorder has focused on the long-term effects of environment and development (O'Connell et al. 2009), whereas descriptive and intervention research on HRSB among youth has emphasized proximal risk and protective factors (Kirby 2002). These two bodies of research sometimes overlap, e.g., early sexual initiation research often examines peer relationships, parental monitoring, and communication but gives less attention to broader factors such as emotional regulation, social/behavioral competence, and processes of social–emotional development. HIV/STI epidemiological research has emphasized proximal determinants of risk behaviors with less attention to early socialization, although childhood sexual abuse has received increasing attention (e.g., Arriola et al. 2005). Decision-making, problem-solving, and skill-building modalities are common in interventions to delay sexual initiation and those to prevent HIV/STIs or teen pregnancy, but with less emphasis on socialization, social competence, and emotional regulation than in early prevention interventions, although peer norm influences, interpersonal skills, and social/community supports have had some attention (Rotheram-Borus et al. 2009). Because of these different areas of emphasis, the long-term follow-up of early interventions may help fill gaps in the knowledge about risk and protective factors for HRSBs and open new areas for enhancement of these early prevention interventions.

Variables such as aggression, impulsivity, externalizing behavior, and conduct disorder have been important in research related to early prevention intervention but largely neglected in HRSB research. Early behavioral HIV research, extrapolating from HIV-seropositive samples, did suggest that personality disorders, including anti-social personality, might be associated with HIV acquisition (e.g., Atkinson et al. 1988; Pace et al. 1990). This earlier literature had many methodological limitations and its findings have not been explored in better designed samples. Factors somewhat related to impulsivity such as sensation seeking (generalized or in the context of sex, e.g., Kalichman and Rompa. 1995) also have been explored, but not in terms of disorders of conduct or unstable behavior (e.g., borderline personality).

The lack of specific attention to sexual behavior would seem to be both an advantage and disadvantage to the interventions discussed here. If these interventions can reduce HRSB in some at-risk populations of interest, they may of particular interest to decision makers in locales where effective sex education programs are difficult to implement. On the other hand, the lack of attention to sexual behavior and development should raise some concerns about the depth and breadth of effects for these interventions, particularly for highly vulnerable youth. For example, the capacity of these interventions to buffer or mitigate the effects of significant life events known to influence sexual development and subsequent HRSB such as childhood sexual abuse was not investigated here and needs to be addressed.

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Significant intervention outcomes were obtained here with universal interventions (Hill et al. 2013; Kellam 2012) and absent where samples manifested relatively extreme behavior at an early age (Conduct Problems Prevention Research Group 2013) or came from environments where persistent vulnerability was likely (Skinner et al. 2013). High risk children did appear to benefit from the Kellam et al. (2012) intervention which did not single them out as intervention targets. The Caruthers et al. (2013) intervention was tiered and had complex, indirect effects, while Spoth et al. (2013) found indirect effects with a universal intervention in exclusively rural settings. Specific pathways varied by study, and reflected specific intervention-related variables and differing analytic approaches. It is unclear whether adoption of more similar modeling methods would have changed some of the outcomes or pathways.

As noted in the papers, associations between substance use and HRSB have been observed in many populations, although specific substances sometimes have particular importance because of their motivational effects on sexual arousal, performance, and/or decision making (e.g., Mansergh et al. 2006). The linkage between delaying the initiation of substance use and subsequent sexual risk was most evident in Spoth et al. (2013). Their sample was almost entirely white; the most homogeneous in terms of race/ethnicity, and the most rural. White non-Hispanic populations usually have higher levels of substance use than those of other racial/ethnic groups, mostly because of higher alcohol consumption (e.g., Substance Abuse and Mental Health Administration 2012), which may have contributed to this finding. The analysis of Conduct Problems Prevention Research Group (2013) highlights the potential for HRSB to be more or less disaggregated from substance use depending on race/ethnicity. This analysis conflated risk with normative behavior (e.g., treating the average age range for first sex in the US (Haydon et al. 2012) as "early initiation") and did not directly address differences in racial norms for age at sexual debut.

The findings of Hill et al. (2013) extend similar findings from the same intervention which were obtained at earlier follow-up (Lonczak et al. 2002). The potential durability of early prevention intervention effects contrasts with the limited durability of effects that have been observed in HIV/STI interventions delivered in adulthood (e.g., Koblin et al. 2004). The durability of these effects may reflect the developmental emphasis of the interventions and their delivery at ages before sexual debut was likely. Consideration of developmental contexts may provide more effective means for the adoption of practices that prevent HRSB, although this would require a finer grained understanding of how protective behaviors are acquired and maintained and how these processes relate to the interventions here.

Ethnic/racial minority and sexual minority populations have the highest HIV prevalence and the largest proportions of new HIV cases in the US (Centers for Disease Control and Prevention 2007). Gay males and transgenders, particularly those from ethnic/racial minority groups, have the most disparate rates of prevalence and new infection. Reduction of HRSBs and their consequences were present for African American youth in two studies (Hill et al. 2013; Kellam et al. 2012), although more often for males than for females in Kellam et al. (2012), and only for those receiving full intervention in Hill et al. (2013). No papers addressed sexual minority youth due to sample size limitations of individual studies. Sexual minority youth experience disparities in a wide variety of areas including the original targets of the interventions here (Institute of Medicine 2011) and the indirect effect of early intervention on HRSB by way of delayed substance use (Spoth et al. 2013) would seem particularly relevant. Other findings, though, raise significant questions. The social experiences of sexual minorities are likely to be at variance from those of heterosexual youth, and problematic experiences in family and school environments are relatively commonplace (IOM 2011). Interventions that demonstrate effects by way of family communication or school bonding may be significantly challenged by experiences such as pervasive social rejection in school or in the family and iatrogenic effects may be possible. It is not clear that common problem-solving, classroom management, or skill-building approaches would provide appropriate ways to address these situations.

Overall, early prevention intervention shows some promise for reducing HRSB and their consequences, although more attention seems necessary around cultural and gender issues. Children manifesting severe early behavior problems or particularly pervasive environmental challenges appear less likely to have HRSB benefits from these interventions. The impact on sexual minorities and on youth exposed to problematic early sexual experience needs to be demonstrated and these effects are likely to be important in determining how these interventions may contribute to reductions of new STI or HIV infections.

Conflict of Interest The views expressed are those of the author and do not necessarily represent those of the National Institute on Drug Abuse, the National Institutes of Health, the Department of Health and Human Services, or the US Government.

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