Original Article

Achieving population-level violence declines: implications of the international crime drop for prevention programming

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Abstract The Sustainable Development Goals (SDGs) adopted by the United Nations for the period 2016–2030 aim to achieve a substantial reduction of interpersonal violence. An increasing body of evidence of what works, emerging from randomized controlled trials, can inform public health policy decisions. However, there is very limited evidence on the kinds of mechanisms that lead to sustained declines in interpersonal violence at the population level. We discuss the implications of what is known about recent major declines in violence to guide violence-reduction policies.
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Introduction

The 2030 Sustainable Development Goals (SDGs) have put violence reduction at the heart of global efforts to create sustainable societies. Goal 16 is entirely devoted to the promotion of peaceful societies and the rule of law.[1] Moreover, three of the 169 SDG targets focus on interpersonal violence: Target 5.2 calls on governments to take measures to eliminate all forms of violence against women and girls; Target 16.1 aims to substantially reduce all forms of violence and related death rates everywhere; and target 16.2 sets the goal of "ending

abuse, exploitation, trafficking and all forms of violence against and torture of children".[1]

The SDG agenda is an extraordinary window of opportunity to make substantial progress toward reducing all forms of interpersonal violence, that is, behaviors that involve the use or threat of use of physical force to hurt or damage other persons (such as child maltreatment, intimate partner violence, robbery, assault, homicide).[2] In the run-up to the adoption of the SDGs (2014–2015), several documents have outlined recommendations about the global public health strategies required to realize the relevant violence-reduction goals.[2–4] However, the SDG agenda also poses vast challenges. Achieving significant population-level reductions across the world within less than two decades presents a task for policy and research at a scale for which no precedent exists in the field of violence prevention.

Evidence on the question "What mechanisms were involved in recent major population-wide declines?" can inform answers to the question: "How can public policies accomplish a population-level drop in interpersonal violence?"[5] This paper, therefore, examines the implications of the international crime drop in high-income countries since the 1990s for violence-reduction programming as part of the SDG agenda.

The Violence Decline in High-income Countries

Many high-income societies have experienced substantial declines in interpersonal violence during the last three decades.[6] The decline is best documented for homicide, the most widely available indicator of interpersonal violence: Across Eastern and Western Europe, North America, Oceania, and affluent Asian countries, homicide rates have fallen substantially since the early 1990s.[7, 8] However, evidence for the decline in interpersonal violence is not limited to homicide.

Table 1 shows comparative data for trends in two indicators that are available for a large number of countries and that capture violence at different levels of severity and in different social contexts, namely overall homicide victimization and bullying victimization among school-aged children aged 11–15. Homicide rates are based on the global homicide dataset by Lappi-Seppälä and Lehti.[7] We extracted frequent bullying victimization rates from the tables presented in Molcho *et al*[9] and Chester *et al*[10] They are based on the five data-

Table 1: Trends in homicide rates and frequent bullying victimization rates, 1993–2010, 26 countries

Country/region	*Homicide rates*			*Frequent bullying victimization rates (per cent)*					
	1993–1997	*2008–2012*	*% change*	*1993*	*1997*	*2001*	*2006*	*2010*	*% change 1997–2010*
Austria	1.12	0.59	−47.3	18.1	17.5	16.5	15.9	17.5	0.3
Belgium (Flemish)	1.84	1.22	−29.2	23.8	21.2	12.0	8.9	11.3	−46.8
Belgium (French)	1.84	1.22	−29.2	36.4	27.4	15.7	17.0	22.2	−19.0
Canada	2.07	1.75	−15.5	13.7	14.7	15.4	14.2	15.5	5.5
Czech Republic	1.90	0.83	−56.6	19.0	14.3	6.2	5.6	5.3	−63.2
Denmark	1.40	0.93	−33.4	23.3	21.6	11.3	8.1	6.4	−70.6
Estonia	16.76	5.67	−66.2	27.2	23.6	18.7	21.6	18.3	−22.5
Finland	2.79	2.19	−21.4	15.7	11.4	9.2	8.0	10.9	−4.4
France	1.07	0.69	−35.5	34.6	17.2	13.2	13.6	14.0	−18.4
Germany	1.57	0.76	−51.5	25.8	28.9	13.2	13.9	10.2	−64.7
Greece	1.36	1.41	3.6	N/A	10.4	8.0	23.0	8.6	−17.8
Greenland	25.00	15.00	−40.0	40.2	35.3	24.3	24.0	16.0	−54.7
Hungary	3.54	1.66	−53.2	18.8	16.3	6.1	6.5	7.6	−53.5
Ireland	1.38	1.35	−2.4	N/A	9.4	8.4	8.7	8.9	−4.8
Latvia	19.51	6.80	−65.2	25.8	29.4	20.0	21.4	19.3	−34.2
Lithuania	11.43	5.94	−48.0	40.6	40.2	34.4	27.3	26.0	−35.4
Norway	0.85	0.69	−18.6	14.8	13.4	11.0	8.3	8.9	−33.7
Poland	2.77	1.08	−60.9	14.7	14.0	10.3	9.4	10.5	−24.7
Portugal	1.46	1.13	−22.2	N/A	19.0	18.9	14.6	14.0	−26.6
Russia	28.93	14.93	−48.4	38.5	24.7	17.7	16.5	17.6	−28.9
Sweden	1.15	0.83	−28.1	6.0	5.2	4.8	4.1	4.0	−24.0
Switzerland	1.29	0.59	−54.1	N/A	21.1	14.0	12.1	13.3	−37.0
UK: England	1.19	1.10	−7.9	N/A	9.4	13.0	9.8	9.5	0.5
UK: Scotland	2.19	1.80	−17.8	10.6	9.7	8.8	9.4	9.2	−5.2
UK: Wales	1.19	1.10	−7.9	11.9	11.9	9.5	11.4	8.9	−25.6
USA	8.18	4.94	−39.6	N/A	13.8	12.6	11.4	11.0	−20.0

Sources: Homicide rates based on Lappi-Seppälä and Lehti.[7] Bullying victimization based on Molcho *et al*[9] and Chester *et al.*[10]

collection waves between 1993/4 and 2009/10 of the World Health Organization (WHO) Health Behavior of School-Aged Children (HBSC) survey.

The data show a decline of homicide rates in 25 out of 26 countries. The relative change in homicide rates varies between −66 per cent (Estonia) and 2 per cent (Greece). Frequent bullying victimization also declined in the majority of countries. Twenty-three countries experienced a decline, while three countries experienced some increase. The relative change in rates varied between −71 per cent (Denmark) and 6 per cent (Canada). Relative change in homicide rates was significantly correlated with relative change in frequent bullying victimization, $r = 0.48$, $p = 0.014$.

The best-documented populationwide decline occurred in the United States.[11] Figure 1 shows standardized trends (1993 = 100) for five types of interpersonal violence: homicide rates as recorded in the Uniform Crime Record data[12]; overall violent victimization as measured in the National Crime Victimization Survey[13]; violence

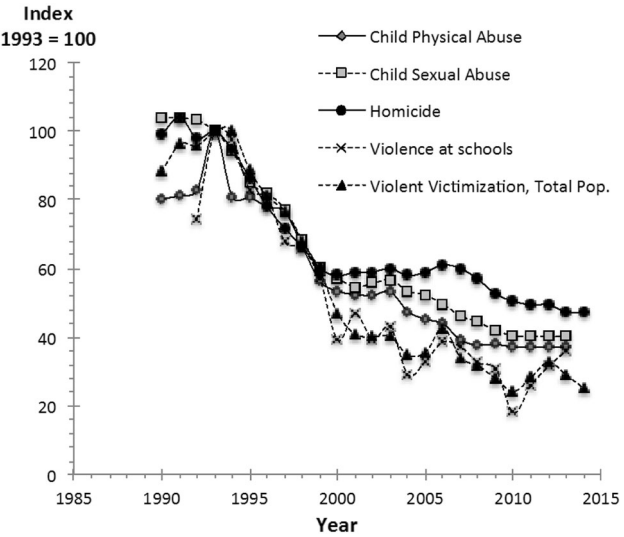

Figure 1: The violence decline in the United States, 1990–2015.
Sources: Child physical and sexual abuse: National Child Abuse and Neglect Data System, NCANDS, data reported in Finkelhor and Jones.[19] Homicide: Uniform Crime Records.[12] Violence experienced in schools among 12–18-year olds: Kemp *et al.*[14] Overall violent victimization: National Crime Victimization Survey.[13]

experienced in schools among 12–18-year olds[14]; and child physical and sexual abuse according to the United States (US) National Child Abuse and Neglect Data System, NCANDS.

The data show that in the United States, interpersonal violence fell by between −53 per cent (homicide) and −77 per cent (violent victimization) from 1993 to 2014. The trajectories were highly similar for different types of violence. Furthermore, it was not limited to violence: rates of property crime followed a similar declining trajectory, although the drop since 1992 was an acceleration of a declining trend that had already started in the late 1970s [13]; teenage pregnancy rates dropped by over 50 per cent since 199 [2, 15] and among adolescents, alcohol use, smoking, and the use of illicit drugs other than cannabis have similarly declined over the last 20 years.[16]

Implications of the Violence Decline for SDG Programming

The decline of property and violent crime has attracted a substantial body of scholarship. Much work focuses on the United States, but researchers increasingly recognize that the similarity of trends cross-nationally requires explanation.[7, 17–20] Table 2 provides an overview of the most common explanations, grouped along a dimension of malleability through public policy intervention.

Table 2: Major explanations of the crime and violence drop

Non-malleable Processes ⟷			*Dedicated Public Health Policies*
Structural and Cultural Change	*Unintended Policy Effects*	*Crime Control Policies*	*Violence Prevention*
• *Demographic Change* • *Economic Prosperity* • *Dissipating Effects of the 1960s Cultural Revolution* • *Waning Crack-Cocaine Market* • *Declining Tolerance to Violence*	• *Legalization of Abortion* • *Decline in Exposure to Lead* • *Diffusion of Psycho-pharmacological medication*	• *Incarceration* • *More Police* • *More Effective Policing* • *Improved Security, Situational Prevention*	• *Diffusion of EBP programming, e.g. parenting, anti-bullying, social skills, offender treatment and rehabilitation*

Many findings about the causal mechanisms have remained controversial, but several important issues emerge that can support the SDG violence-reduction agenda.

Addressing broad risk factors and utilizing de-escalating dynamics

Policy makers are quick to claim credit when crime falls in their constituency. The evidence suggests that policy makers sometimes overstate such claims. Local or national policy decisions do matter. However, work on the international crime declines shows that beyond local, regional, and national influences, some broad underlying factor has shaped the shared trend across high-income countries.[21] Also, neighboring wards, cities, and countries have had highly similar trends, possibly meaning that de-escalating dynamics are contagious and self-reinforcing, spreading across spatial units.[22] Also, increasing evidence suggests not only that different manifestations of violence tend to show similar trends, but that at least in some countries, the decline in violence is part of a bundle of related problem behaviors such as property crime, substance use, or teenage pregnancy that have all moved in the same direction.[19]

These observations suggest a common factor or some factors that has/have affected the common underlying trend across space and between behavior domains. This corresponds to findings at the individual level where research indicates high comorbidity across developmental psychopathologies, a lack of offender specialization, and the subordinate role of domain-specific risk factors.[23] Unfortunately, researchers do not at present fully understand the nature of these possible common causes. One hypothesis is a broad cultural shift in much of the affluent Western world toward increasing emphasis on self-control and a heightened moral proscription of behaviors that harm others.[24] Overall, these findings underline the significance of prevention programming that broadly supports a healthy child and youth development rather than focusing overly on specific subtypes of violence.

Thinking beyond violence-prevention programming

Much of the decline in interpersonal violence in the US and internationally is likely unrelated to the specific programming of violence prevention.[19] Rather, much of the drop seems to be due to either

unmalleable social forces (such as economic growth, drug epidemics) or unintended side-effects of policies that targeted other goals.

One example is psycho-pharmacological medication, which has recently found attention as a possible contributor to the crime decline.[25,26] Putative causal mechanisms include the comorbidity between aggressive behavior and a range of psychiatric disorders including depression, and negative effects of growing up in families with multiple mental health issues on child development. In reviewing a comparison across the US states, Marcotte and Markowitz[26] suggested that about 5 per cent of the decline in violence is due to the expansion of psychotropic medication. Also, Finkelhor and Johnson[25] showed a fivefold increase in prescription of psychotropic drugs to adolescents aged 12–17 between the mid 1990s and 2010, broadly in line with the US drop in violence. Psychotropic drugs may explain international patterns: Marcotte and Markowitz[26] show that crime declined more in countries with the fastest growth in psychiatric medication, especially selective serotonin reuptake inhibitors (SSRIs). In the Netherlands, Bouvy and Liem[27] found a similar significant inverse relationship between the decline in both homicide and the use of antidepressants between 1994 and 2008.

It is unclear whether these findings withstand closer scrutiny. However, they illustrate the importance of correctly anticipating the potential for violence-prevention effects across different areas of public policy. This includes education (e.g., teacher training), family planning (e.g., family size), alcohol control (e.g., drunkenness), or urban planning (e.g., access to employment opportunities).

Integrating crime control into a public health perspective

Researchers sometimes see public health approaches to violence prevention as a superior alternative to costly and largely ineffective crime control policies.[28] However, the evidence on the international crime drop suggests that crime control will likely play an important part in the programming of violence-reduction goals: Two major explanations for the US and the international crime drop with good evidence both from randomized controlled trials and trend analyses emphasize crime control, especially proliferation of security technologies and more effective policing.

Farrell *et al*[29] argue that the international fall in crime is best seen as a result of vast investments in security technologies that have affected almost every aspect of daily life. This includes electronic immobilizers to prevent car theft, wider installation of burglar alarms, CCTV cameras in city centers and hotspots of disruptive behavior, a less cash-based economy, more private security personnel, and mobile telephones to call help and record crimes more easily. These findings suggest that more coordinated efforts to build security and violence prevention into daily technologies could be a critical strategy to support population-level violence reduction.

Research has long assumed that evidence-based policing played a significant part in the US crime decline.[11] A recent aggregate-level analysis (comparing trends in 50 states and the 50 largest US cities) of the crime decline across US states concludes that change in policing strategies, especially a data-driven police management approach that emphasizes good management and accountability, was responsible for 5–15 per cent of the overall decline in crime.[30] A growing number of randomized controlled trials support these findings, suggesting that innovative policing techniques such as problem-oriented policing, hotspots policing, and legitimacy policing have substantial violence-reducing effects.[31]

Such findings bolster a core principle endorsed in goal 16 ("Create peaceful and inclusive societies") of the SDGs. We must integrate its emphasis on the rule of law, access to justice, and effective institutions, recognizing that public health approaches and crime control approaches are interdependent components of a comprehensive strategy.

Wider culture change

An elusive but potentially highly relevant mechanism for achieving sustainable reductions in violence within the SDGs relates to wider change in norms and attitudes. For example, some scholars have hypothesized a link between the declining acceptability of spanking and the drop in levels of violence in a society.[32]

Unfortunately, hardly any data exist to examine this or other hypotheses about possible effects of 'soft' change in cultural standards and aggressive behavior. For example, it would be useful to know whether the drop in interpersonal violence across high-income

countries can be linked to a population-level change in parental values and practices. The evidence is not as clear as one would think. In the United Kingdom (UK), Collishaw *et al*[33] compared two major surveys on parenting in 1986 and 2006. They found a significant increase in parental monitoring and parental expectations, and the number of youths disclosing their activities to the parents over the period. Yet contrary to expectations, child conduct problems increased during the same period. Similarly, Swiss data suggest a drop of youth violence by 40–60 per cent between 1999 and 2014.[34] However, none of this change can be attributed to adolescents' experiences with parenting, which remained unchanged during the period.

Societywide changes in beliefs related to violence potentially play an important role for achieving the SDG violence-reduction goals. However, there is very limited evidence to reliably assess the extent to which beliefs and attitudes related to violence or parenting behaviors and values have changed over the past 20 years, and whether they can account for some part of the decline in violence.

How about Evidence-based Prevention?

The beginning of the violence decline in the mid-1990s coincides with the initial move toward an evidence-based public health approach to violence prevention.[28] Since then evidence-based prevention (EBP) has moved to the core of policy decisions in the field: In the United States, clearinghouses provide policymakers with ever more detailed research evidence about what works, and governments increasingly use the evidence to inform their policy and budget decisions.[35] In Europe, the Scandinavian countries have probably taken the lead in introducing EBP into their prevention strategies. Norway, for example, introduced a nationwide system of evidence-based services to address child conduct problems in 1998.[36]

But has the dissemination of EBP played a role in the decline of violence across high-income countries? The answer is: We don't know. No study has yet examined empirically whether the natural diffusion of EBP is associated with variation in the decline of violence at the macrolevel.[37] Why? There exist almost no detailed high-quality comparative data on the penetration of evidence-based programs and

principles into local and national education, child services, health, urban planning, and justice systems.[35]

We use the example of bullying prevention to illustrate the challenges. Based on controlled outcome studies, Farrington and Ttofi [38] estimate that on average, evidence-based bullying prevention programs reduce bullying perpetration and victimization by about 20 per cent. Some countries have widely introduced such programs over the past 15 years. For example, in the United States a survey in 2011 found that 75 per cent of youth aged 10–17 participated in at least one school-based violence prevention program;[39] in Norway, a government initiative in 2000 led to national dissemination of the evidence-based Olweus Bullying Prevention Programme;[40] and in Finland, a national trial evaluated the prevention program KiVa in 2007–2009, then Finland rolled it out across all schools from 2009.

But was a wider introduction of EBP associated with a greater decline in bullying victimization? No international indicators exist on the extent to which education systems introduced EBP in schools. We therefore tentatively used two variables on the strength of EBP research to estimate a country's endorsement of EBP principles: The first is the number of evaluation studies per country included in the Farrington and Ttofi[38] meta-analysis. The second is the number of evaluation studies per country included in the current WHO violence prevention database.[3] The indicators correlate with $r = 0.80$. We computed rank scores for each indicator, and then computed the average. Twenty-six countries had data on all four waves of the HBSC and these were available for analysis. We coded thirteen countries with the highest rank as "high EBP", and 13 countries with the lowest ranks as "low EBP". Countries coded as "high EBP" were also much more likely to report a large-scale implementation of anti-bullying programs in WHO's Global Status Report on Violence Prevention.[41]

Results appear in Figure 2. It suggests that countries with a stronger EBP tradition had lower levels of bullying victimization in 1998. However, there is no *prima facie* evidence that countries that promoted evidence-based bullying prevention had a stronger decline over time as compared to those who are lagging behind in the implementation of EBPs in the area of bullying prevention.

Evidence-based prevention is based on the premise that if policy and funding were based on what works, then a society would experience better population-level outcomes in child maltreatment, bullying,

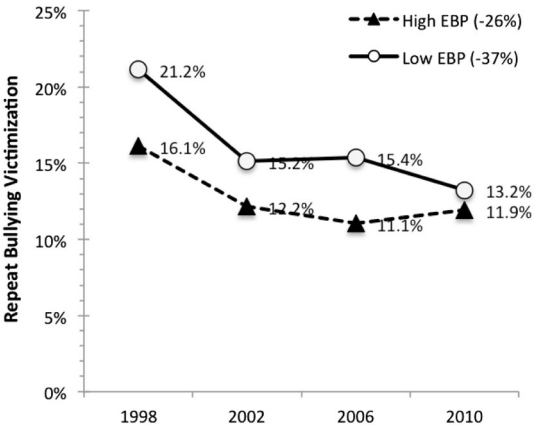

Figure 2: Trend in "Being Bullied" frequently in high EBP and low EBP countries. *Note*: High EBP countries: Austria, Belgium (French and Flemish-speaking parts), Canada, UK (England, Wales, Scotland), Finland, Germany, Norway, Sweden, Switzerland, USA. Low EBP countries: Czech Republic, Denmark, Estonia, France, Greece, Greenland, Hungary, Ireland, Latvia, Lithuania, Poland, Portugal, Russia.
Source: Multiple bullying victimization based on Molcho *et al*[9] and Chester *et al*.[10]

sexual victimization, and street violence. The findings first suggest that currently no simple link seems to exist at the level of countries or states. However, the primary conclusion probably is that we need detailed monitoring systems to observe the dissemination of EBP into all relevant systems. This will be especially important in the new 'pathfinder' countries, countries that take part in the Global Partnership to End Violence against Children, a major initiative by international organizations including UNICEF and WHO to support countries that commit themselves to a substantial reduction in violence against children.[42]

Conclusions

The science of how to implement, monitor, and evaluate a package of evidence-based strategies aimed at substantially reducing intimate partner violence, violence against children, and violence in public space at a global level over the coming 15 years is only just emerging. The state of research, and its limitations, on the mechanisms responsible for the decline in interpersonal violence in many high-income countries

over the past 20 years can help to shape the global violence-reduction agenda.

Second, research on the decline since the 1990s suggests that specific violence prevention programming played a subordinate role in the reduction of violence at the population level. A more comprehensive approach should integrate emerging knowledge about the macrolevel effects of broader public health policies, for example in the field of the prevention and treatment of mental health more generally.

Third, improved policing strategies and the spread of security technologies are among the few relatively uncontested contributors to the decline both in the United States and internationally. This suggests that integrating evidence-based crime control and public health prevention strategies will be essential to achieve the violence-reduction goals in the SDG agenda.

Fourth, the absence of reliable data makes it currently impossible to determine with any degree of confidence, whether the dissemination of evidence-based approaches across public health systems has positive effects at the level of municipalities, states or whole nations. Detailed high-quality data on the diffusion of evidence-based programs and practices at local and national levels will be essential to assess whether the planned strategies contributed to achieving the SDG goals.

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