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Summary

As the most serious crime, homicide is both relevant and suitable for cross-national comparisons. The global homicide rate of ca. 6 per 100,000 is an average of hugely diverging national rates between 0.25 in Singapore and ca. 100 in El Salvador. The validity of global homicide statistics suffers from various differences in definitions and reporting and registration processes. Both criminal justice and causes of death statistics are used by the WHO to construct rates, yet these are available only for a minority of countries. An overview on homicide in history and non-state societies shows that violence levels were considerably higher compared to today's developed world, and have dropped dramatically in Europe and North America during the early modern period. The rates first increased and then declined between ca. 1960 and today in most developed nations in a synchronized manner, hinting at common influences. In recent years, homicide trends have shown a polarizing pattern, with increasing rates in Latin America and decreasing rates in most other world regions, especially East Asia and the Pacific where rates have fallen below the European average concurrent with rising scores on the Human Development Index. Except in Eastern Europe, the frequency of homicide is strongly linked to the use of firearms which account for 44 % of homicide cases world-wide.

Longitudinal studies have produced robust evidence for the pivotal role of deprivation and inequality in fostering lethal violence, and of social welfare policies in reducing it. While the transition to democratic political systems seems to increase homicide rates temporarily, the legitimacy of state institutions and the suppression of corruption are connected to lower homicide rates. Due to conceptual and methodological problems, questions concerning the generalizability of effects across space and time remain. Nevertheless, the research findings are sufficiently robust to draw important conclusions for violence prevention: Reductions in poverty and income inequality, investments in welfare policies and gender equality, and improvements in the legitimacy of state institutions will help to bring homicide rates down.

Keywords: homicide, violence, cross-national comparison, social inequality, poverty, modernization, developing countries, crime causation

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Introduction

As the most serious crime, homicide has always attracted the special attention of scientists and the general public. Estimates set the annual number of homicide victims at around 400,000. The global distribution of lethal violence is highly skewed: half of all homicides happen in countries with only 10 % of the world population, while 3 billion people live in countries with low homicide rates (UNODC 2014, p. 12). The variability of homicide rates has fascinated social scientists since the 19th century. In contrast to most other crime types, the definition of homicide is relatively similar across the globe, and no other crime is registered and investigated to the same degree by state authorities. Thus, commonly accepted as the most complete and least biased crime data, homicide statistics have kept a unique role in cross-national crime research until today. While homicide rates do not necessarily reflect violence levels of societies generally (Zimring & Hawkins, 1997), there is no doubt about their salience as an indicator of grave social problems. Cross-national homicide research focusses on macro-level societal conditions influencing the volume of lethal violence. The global variability in homicide rates and socioeconomic, political and cultural indicators offers a perspective on crime causation which is missing in most research focusing on single countries and individual-level processes. Thus, this article concentrates on cross-national homicide research using large samples of nations.

Definitions

The term homicide is of Latin origin meaning “killing of a human being”. Yet, official definitions of homicide are less universal than this simple term may suggest. The most common understanding of homicide includes the two attributes “intentional” and “unlawful” (UNODC, 2014; Smit, de Jong & Bijleveld, 2012). This definition excludes non-intentional killings as road traffic deaths as well as lawful killings as judicial executions or justifiable

self-defense (Alvazzi del Frate, Mugellini, Pavese & Karimova, 2012). Aggravated assault leading to death constitutes a grey area as the intent to kill may be difficult to establish or to exclude in many cases (Lysova & Shchitov, 2015, p. 260). In addition, the definition is restricted to cases of individual acts of interpersonal violence which normally include only few perpetrators and victims, in contrast to killings in armed conflicts during wars and civil wars. Thus, the United Nations Office for Drugs and Crime (UNODC) which monitors homicide trends world-wide defines intentional homicide as “unlawful death purposefully inflicted on a person by another person” (UNODC, 2014, p. 9).

There are numerous examples, though, in which lethal violence defies a clear-cut classification, potentially leading to a serious under- rather than overestimation of homicide counts. Killings by law enforcement authorities are in most countries seen as lawful by definition, even if evidence points at the excessive use of force or patterns of extrajudicial and arbitrary executions which are clearly unlawful (UNODC, 2014; Geneva Declaration, 2015). In the USA, civil rights groups criticize that cases of excessive use of force by police officers against unarmed citizens are rarely prosecuted in criminal courts. Thus, the number of around 1.000 people killed by police officers annually – based on data collected by newspapers, as the FBI reports only around 450 cases of justifiable killings – does not contribute to the homicide count in the USA (Davis & Lowery, 2015; Zimring, 2017). The homicide estimate for Venezuela for 2016 published by a NGO and including police killings was 30 % higher than the official homicide rate which excluded this category (McEvoy & Hideg, 2017, p.28). Many Latin American countries have a tradition of widespread extrajudicial killings and the involvement of police forces in death squads which kill with impunity (Cruz, 2016; Denyer Willis, 2015). The most recent and blatant example of extrajudicial killings by police forces is the “war on drugs” in the Philippines which is estimated to have claimed 12,000 lives in 2016 and 2017 which would double the official

homicide count (Human Rights Watch, 2018, p. 429). Another example of unclear demarcations are large-scale lethal terror attacks which have been recorded as homicides in some countries as the UK and Norway but not in others as the USA and Spain (UNODC, 2015, p. 60 FN 38). In countries suffering from multiple forms of lethal violence and on the verge of or after civil war as Iraq or Columbia, the distinction between armed conflict, terrorism, and homicides related to organized crime may be exceedingly difficult (Eisner, 2013; UNODC, 2014, p. 102).

To summarize, the definition of intentional homicide excludes other forms of lethal violence from the radar. In order to achieve a full picture of lethal violence, the "Geneva Declaration on Armed Violence and Development", a supranational group of governments and UN organizations, has published estimates of the global tally of violent deaths. According to the estimate for 2016, 380,000 (68 %) out of 560,000 killed were victims of intentional homicides, while 99,000 (18 %) were casualties of armed conflicts including terrorism (McEvoy & Hideg, 2017, p. 20). Remaining categories were unintentional homicides (10 %) and killings in legal interventions (3 %). While the overall count of violent deaths has increased in recent years, McEvoy & Hideg (2017, p. 52) report a shift from intentional homicides which have decreased to deaths in armed conflicts which have increased, mainly due to civil wars in the Near East. Yet, only two of the five countries with the highest rates of lethal violence in 2016 are experiencing armed conflicts (Syria and Afghanistan), while the counts are driven by intentional homicide in the three other countries (El Salvador, Honduras and Venezuela), all situated in Central and South America. Thus, intentional homicides constitute by far the largest segment of the total violent death toll globally.

Measurement & Statistical Data

Most current international studies on homicide use hybrid statistics based on both criminal justice and health data sources. The World Health Association (WHO) has emerged as the prime data supplier as its causes-of-death statistics are often regarded as superior to police and criminal justice data, especially for comparative purposes (Andersson & Kazemian 2018; Koepfel, Rhineberger-Dunn & Mack, 2015; LaFree, Curtis & McDowell, 2015). In parallel, the United Nations Office for Drugs and Crime (UNODC) runs the “United Nations Survey of Crime Trends and Operations of Criminal Justice Systems” (UN-CTS) which primarily draws on criminal justice data but incorporates WHO health data where deemed more reliable, just as the WHO does vice-versa. While this hybrid approach succeeds in providing the best possible data basis, homicide statistics still cover only around a third of all countries and leave wide gaps for large parts of the world, especially in Africa, East Asia and Oceania where no official data of either source exist. Thus, research on global homicide is dependent on country samples which are biased towards the richer and more developed countries (Kanis, Messner, Eisner & Heitmeyer, 2017).

In an attempt to overcome these limitations, the WHO has started to produce model-based estimates of homicide rates for countries with missing data using covariates that explain variation in levels of homicide for the existing country sample (WHO, 2014, p. 64). The set of covariates includes among others the infant mortality rate, the gender equality index and religious fractionalization. In a number of countries, not even these social indicators are available and instead imputed based on WHO regional data (WHO, 2014, p. 64). This estimation approach is currently applied to ca. 70 % of all countries, mostly in Africa and Asia (UNODC, 2014, p. 110). Kanis et al. (2017) have alerted researchers to the potential tautology if such estimated homicide rates were associated with social indicators identical or similar with those used to arrive at these estimates in the first place.

As for countries with existing statistics, the WHO uses either health or criminal justice data whichever is higher and adjusts these data upwards based on different rules and following a general assumption that homicides are underreported in most countries (WHO, 2014, p.63). In many highly developed countries with well-organized police forces and high homicide clearance rates, the criminal justice statistics tend to report slightly more homicide cases than the causes-of-death statistics, whereas in most less developed countries with dysfunctional law enforcement agencies and where both statistics can be compared, the causes-of-death statistics report much higher homicide cases and thus appear to be closer to the “true” homicide count (Lappi-Seppälä & Lehti, 2014, p. 138). Apart from bureaucratic dysfunction, deliberate distortions may lead to an underestimation of homicide rates in autocratic regimes. Lysova & Shichtov (2015) examining the quality of homicide data in Russia found grounds to assume that both statistics are being manipulated downwards for political reasons. As the homicide counts in Russian police statistics decreased during the 2000s from 34,000 to 18,000, the counts of “unidentified bodies” increased from 37,000 to 78,000, suggesting potential misclassifications both due to deliberate manipulation as well as a lack of investigative resources. The latter problem is not restricted to Russia but pertains to other countries as well. A stark example is Mexico where thousands of people, many of whom presumably homicide victims, have disappeared in hidden graves and thus have not entered any statistics (Wade, 2017). In some countries, certain population groups are particularly vulnerable yet insufficiently protected by law enforcement. For example, in Canada over 100 indigenous women have been missing since 2015 and most of these cases are considered suspicious (<http://www.cbc.ca/missingandmurdered/>). No country is immune from the problem of undetected homicides. In the absence of bodies or of suspicion (i.e. in the case of elderly and frail persons), homicides may completely escape detection and prosecution. A forensic medical study has estimated that up to 1,200 homicides per year may

go undetected in Germany (which would double the homicide count), a country in which post mortem examinations have been reduced for fiscal reasons (Brinkmann et al, 1997; Zack et al., 2017).

Even where homicide data appear reliable the scope of information is severely limited to the bare facts as the age and sex of victims and perpetrators (if known) and the killing method. A few countries have initiated more advanced homicide reporting systems which routinely collect detailed information on each case, as the National Violent Death Reporting System operated in many US states (Parks, Johnson, McDaniel & Gladden, 2014) and the European Homicide Monitor jointly run by Finland, Sweden and the Netherlands (Liem et al., 2013; for Australia see Bryant & Bricknell, 2017). While these data sources offer more opportunities for in-depth analyses, so far they cannot support global studies on homicide.

In sum, while efforts to provide reliable data have improved homicide statistics and enlarged its global scope, large parts of the world remain blind spots, and deficient data collections result in figures that are likely to be under- rather than overestimated especially in less developed countries. At present, both WHO and UNODC are the best available sources of national homicide rates, and researchers are well advised to carefully consider the limitations to their validity, in particular when using larger country samples beyond the Western world.

Homicide in Pre-History and Non-State Societies

Are completely peaceful human societies imaginable? Are modern and complex societies more or less violent than traditional and simple societies? Such fundamental questions about the human potential for violence and its control have intrigued many scholars and widened the focus to societies outside the civilized world, stimulated by a conflict between the “Rousseauian” view of the “peaceful savage” versus the “Hobbesian” assumption of the

pacifying role of the modern state (Nivette, 2011b, p. 580; Pinker, 2011, p. 35). Research on lethal violence in pre-modern and pre-historical times as well as in contemporary non-state societies is severely hampered by the lack of systematic data. However, historians, anthropologists and even archeologists have produced rough estimates of rates of lethal violence (as well as rich qualitative information) from patchy data sources including court records, ethnographic field work and osteological evidence. Skulls and other skeletal remains throughout human pre-history show marks of fatal violence inflicted with sharp instruments (Kelly, 2005; Walker, 2001).

The broad picture that emerges from these studies is one of large variation across human societies of all periods and constitutions rather than a clear trajectory of increasing or decreasing violence with modernization (Nivette, 2011b; Eisner, 2013). Estimates of lethal violence rates among non-state societies range from less than 2 per 100.000 in parts of Africa up to several hundred or even 1.000 per 100.000 in New Guinea and among Native American peoples (Nivette, 2011b, p. 583). Thus, some of these “primitive” societies were as peaceful as the least violent-prone contemporary societies like Iceland, while others suffered from violence levels that by far exceeded the highest homicide rate currently recorded for Central American cities as Caracas (UNODC, 2014, p. 150). On average, though, the homicide rates of pre-history and non-state societies are likely to have been well above those of even the more violent present-day societies (Pinker, 2011).

One core problem interpreting these estimates is the blurred distinction between in-group and out-group killings. While the former are individual acts of interpersonal violence, the latter are seen as collective raids or “primitive warfare” between tribes (Keeley, 1997; Knauff, 1991; Wrangham, Wilson & Muller, 2006). For example, people inhabiting the Andaman Islands are said to be extremely hostile towards outsiders but to shun violence in internal conflicts (Nivette, 2011b, p. 590; Wrangham & Glowacki, 2012, p. 12). In contrast,

ethnographic evidence collected by Chagnon (2013, 1988) describes the Yanomami people of the Amazonas rainforest as extremely violent both within as well as between groups. According to Chagnon's (1988: 985) calculations, almost a third of male adults were killed, and almost half of them participated in killings. Although some ethnographers have questioned Chagnon's account (Sponsel, 1998), there is enough evidence across space and time to acknowledge that lethal violence is no anomaly but an universal feature of human societies, and that extremely high rates of homicides have occurred in various types of societies. The causes for variation in lethal violence among non-state societies remain largely unexplored. Some studies have found correlations with the preponderance of strong kin ties over "weak" ties linking different clans and with harsh socialization practices (Eisner, 2013). Some anthropologists believe that violence increased considerably with the transition from nomadic hunter-gatherer to sedentary agricultural societies because of increasing conflicts over territory and property (Allen, 2014; Fry & Söderburg, 2014; Lee, 2014), while others stress the major role of resource scarcity as the driving force of violence (Allen, Bettinger, Coddington, Jones & Schwitalla, 2016).

Homicide Trends in Pre-Modern European History

The estimates of long-term homicide trends become more reliable with the emergence of archival sources in pre-modern Europe, long before the start of national crime statistics in the early 19th century. Court records of capital cases started during the 13th and 14th centuries in some cities and districts in England, Germany and Italy, and became much more frequent during early modern times. Manuel Eisner (2001, 2003) aggregating many historical studies based on local or regional sources estimated that the homicide rate ranged between ca., 20 and 50 per 100,000 in many European countries during late medieval times before declining to 1 to 2 per 100,000 in mid-20th century. According to this picture, large parts of Europe

have seen a massive drop in lethal interpersonal violence by a factor of 10 to 50 (Eisner, 2013, p. 88).

Despite patchy data series, there is little doubt that this secular decline initiated during the 16th century in Northwestern Europe (England, Low Countries) and spread to Scandinavia in the 17th century. Around 1800, at the eve of the Industrial Revolution, homicide rates in these countries were already as low as ca. 1 per 100.000. A similar decline has been reported for the New England colonies during the 17th and 18th centuries (Roth, 2009; Eisner, 2003, p. 107). The decline occurred later in Central Europe (i.e. the German-speaking countries), and started only during the late 19th century (and from a much higher level) in South Europe. Within Central and South European countries, a north-south and center-periphery divide emerged during this long transition period, with higher homicide rates in southern and more rural and traditional regions, a pattern that was already apparent to early sociologists as Emile Durkheim. By mid-20th century, shortly after World War II, European homicide rates had converged to a historic minimum of less than 1 per 100.000 in North and West Europe and around 1 in Central and South Europe. The 1950s and early 1960s mark a turning point in the long-term homicide trend across many developed nations, as the decline came to an end and rates started to rise again (Eisner, 2008; see below). The United States, too, fit broadly into this historical pattern, despite a generally higher level and a less clear-cut downward trend during the 19th and early, 20th centuries.

The secular decline of homicide in most of Europe has only slowly attracted the interest of violence researchers although it may hold important lessons for contemporary efforts to reduce violence globally if it can be attributed to general causes (Eisner, 2017). Scholars generally agree that the historical trend repudiates crude assumptions about social disorganization as the consequence of industrialization and urbanization. Explanations have evolved around the grand theories of sociologists Emile Durkheim and Norbert Elias, both

focusing on the parallel development of macro-level structures in state and economy and of micro-level socio-psychological adjustments favoring restrained and civilized behaviors (see below). Honor and retaliation are key concepts for the understanding both of historical as well as contemporary patterns of homicide (Brown & Osterman, 2012; Eisner, 2003, p. 129). In pre-modern Europe, a large proportion of killings happened in public between male adults in an aggressive defense of reputation. In stark contrast to present-day patterns, lethal violence was not concentrated in lower class and marginal populations but fairly common also among higher social strata including the nobility, as violent rituals like dueling indicate (Cooney, 1997; Eisner, 2003, p. 116). However, in the absence of systematic data for historical periods before roughly mid-20th century on almost all relevant social mechanisms, the major contribution of historical homicide research may be rather to inspire and generate hypotheses than to test and validate them.

Global Homicide Pattern and Trends since 1950

The burden of homicide, its patterns and trends vary enormously around the globe. Looking at the latest available figures, the world's most violent country in 2015 was El Salvador with a homicide rate of 108.6 per 100,000, while the most peaceful was Singapore with a rate of 0.25, which translates into a more than 400-fold difference between the two extremes. In absolute numbers, Mexico was (after Brazil) the second-most deadly country with a victim count of 25,339 in 2017, while Japan, a country of equal population size, reported just 395 victims in 2014, 1.6 % of Mexico's volume. A global map of homicide rates reveals distinct patterns of world regions featuring broadly similar levels of homicide (UNODC, 2014, p. 23). Around a third of the variation of national homicide rates lies between 16 world sub-regions (including North Africa but excluding Sub-Saharan Africa). The three sub-regions of Latin America lead the table with population-weighted mean homicide rates of around 25 (Central

America), 23 (South America) and 16 (Caribbean). However, South Africa as a single country has an even higher homicide rate of over 30. WHO estimates for most of Sub-Saharan Africa (where no homicide statistics exist) are similar to the Latin American figures. In contrast, most Asian regions except East Asia have homicide rates (often based on WHO estimates, too) close to the global average of 6. The three major countries in East Asia, China, Japan and South Korea, all have very low homicide rates of less than 1, and India's homicide rate (3.2 in 2014) is below the U.S. rate (4.9 in 2015). The low rates of the most populous Asian nations set the overall population-weighted rate for Asia at 2.9, slightly below the European rate of 3.0. Within Europe, the main distinction is between Eastern Europe with a mean rate of around 5 and all other parts of Europe with rates around or less than 1. The higher burden of violence in Eastern Europe is entirely attributable to Russia's very high homicide rate (11.3 in 2015), whereas the rates of most other Eastern European countries are very similar to those in Western Europe.

This snapshot of the current cross-national variability of homicide rates is the product of developments over the last decades which have resulted in a more pronounced global polarization of violence masked behind a moderate decline of the global volume of homicide. Latin America and South Africa, already the most violent world regions, have shown high-stable or even increasing trends in recent years, while most other regions, in particular Europe, North America and Asia reported declining rates. Applying formal tests to these national trends, LaFree et al. (2015) found significant consistency in the trends only for the wealthy nations but not for Asia and Latin America, probably due to larger heterogeneity within these regions. Diverging trends in different world regions seem to contradict the notion of a global pacification process which Steven Pinker (2011) and the advocates of the modernization hypothesis have proposed. The following brief overview is based on recent in-

depth studies of global homicide trends (Baumer & Wolf, 2014; Lappi-Seppälä & Lehti, 2014; La Free, Curtis & McDowall, 2015).

Looking at Europe and North America first, homicide trends since the 1950s were marked by a strong upswing from the historical low after World War II until the early 1990s when rates started to fall again until today. Central and Eastern European countries experienced a much more dramatic rise of homicide rates after the breakdown of Communist rule which may be explained by rapid social change (Pridemore & Kim, 2007, see below). With some delay, rates have come down again, too, and a similar convergence to the low rates of West Europe has also been observed in the West Balkan region after the end of the Yugoslavian civil war (Alvazzi del Frate & Mugellini, 2012). The same cyclical pattern marked by an upswing from the 1960s to the 1990s and a drop since then applies to Canada and, albeit on a much higher level, the USA.

Not only does the reversal of the historical homicide decline in Europe and North America since the 1950s pose a challenge to theoretical explanations of a long-term and linear modernization process (Thome, 2007), but the synchronization of cyclical trends in many nations suggests common causal processes transgressing country borders (Messner, Pearson-Nelson, Raffalovich & Miner, 2011, p. 77). Lafree (1998) and Eisner (2014) proposed that socio-cultural change in the postwar period resulted in a loss of legitimacy and self-control which increased violence. The optimistic take is that it may have been a temporary aberration from the long process of civilization (Pinker, 2011, p. 121).

However, to the extent that improvements in the medical treatment of victims resulting in higher survival rates have an impact on this long-term trend, the decline in homicide rates would not necessarily represent a decline in serious interpersonal violence. This issue is rarely touched upon as very little systematic data is available to gauge the impact of medical treatment. An epidemiological study from the USA showed that while homicide fatal

firearm injuries declined by 0.38 per 100.000 annually between 2001 and 2013, homicide nonfatal firearm injuries (which more than double fatal injuries) increased by 0.43 per 100.000, thus resulting in an overall increase of firearm-related violence (Kaselan et al., 2017).

An optimistic interpretation is also conceivable in the case of Asia (where homicide data are much more patchy). While not as congruent as Europe and North America due to a large heterogeneity in economic and political development, Asia has seen a long term decreasing pattern since the 1950s and the strongest decline of all world regions between 1992 and 2010 (Lafree et al., 2015, p. 493; Baumer & Wolff, 2014, p. 256). Contrary to Western developed nations, Japan's homicide rate has been in an uninterrupted decline since 1950, and countries as Thailand, Mongolia and Sri Lanka recorded homicide drops of 50 % to 70 % over the last decade. Coincidentally, East Asia and the Pacific has also been the world region with the steepest increase in the Human Development Index since 1990 (UNODC, 2015, p. 60, see below).

Latin America's experience poses a marked contrast to Asia, North America and Europe, especially during the last two decades. It was the only world region (with sufficient data) to record an increase in homicide rates between 1990 and, 2010 (LaFree et al., 2015, p. 494). Homicide rates have increased dramatically since 1993 in many Caribbean and Central American countries as Mexico (+ 116 %), Venezuela (+ 41 %), Jamaica (+52 %) and El Salvador (+ 192 %). Only some countries as Guatemala, Honduras and particularly Colombia have seen drops in recent times, but still remain very violent compared to the global average. Volatile changes in homicide rates appear to be related to civil wars and changes in drug markets in many Latin American countries (Chioda, 2017; World Bank, 2010).

Spatial as well as temporal variations in the quantity of lethal violence are associated with typical shifts in its composition. Almost universally, higher homicide rates are

connected with higher shares of young, male perpetrators and victims, of organized crime and gang related homicides, of homicides committed with guns, with fewer cleared cases and convictions, as well as with lower shares of partner-/family related violence and female victims. This nexus between the volume and the structure of lethal violence reflects the fundamental fact that variations in the frequency of homicides are foremost variations in violent competition among unrelated young males fighting for influence, honor, or material gain (Eisner, 2008, 2013). As a general rule, perpetrators and victims of homicide – with the important exception of intimate partner homicide – tend to be from the same demographic groups. In their *Global Study on Homicide*, the UNODC (2014) distinguishes between “homicide related to other criminal activities”, e.g. committed by organized criminal groups, “interpersonal homicide” between intimate partners, family members and acquaintances, and “socio-political homicide”, e.g. terrorism and hate crime. Globally, the homicide rate of males is four times higher than the female rate, and young men aged 15 to 29 have the highest victimization risk, accounting for 43 % of all victims (UNODC, 2014, p. 28).

Because the variation in total homicide rates largely depends on the volume of violence among the young male population, countries with lower homicide rates tend to have higher proportions of female homicide victims. This inverse relation has since long been known as the “static law” (Lappi-Seppälä & Lethi, 2016, p. 428). Throughout the postwar decades from the 1950s to the 2000s, Lappi-Seppälä & Lethi (2016, p. 459) found a strong negative association between total homicide rate and female-to-male homicide ratio accounting for 60 % of the variance. In high-violence countries like Brazil, Venezuela, and El Salvador, only between 7 and 11 % of homicide victims are women, while in low-violence countries as Norway, Austria and Singapore the share is between 35 and 50 % (UNODC, 2014, p. 134). The very few instances where the female-to-male homicide ratio is close to parity are all high-income, low-violence countries (McEvoy & Hideg, p. 63). Stöckl et al.

(2013) estimated that globally, 43 % of female homicide victims but only 6.5 % of male homicide victims relate to intimate partner violence. At the same time, countries with higher male homicide rates also have higher female homicide rates (and both rates are largely influenced by the same predictors, see Koepfel et al., 2015, p. 73; Lappi-Seppälä & Lehti, 2016, p. 462; Stamatel, 2014), yet the variability of the latter is much less pronounced.

The frequency of homicide is also strongly linked to the proportion of cases involving firearms in most world regions except Eastern Europe. Globally, 44 % of homicides were committed with a firearm in 2016 (McEvoy & Hideg, 2017, p. 48). This share varied between 10 % in Oceania, 13 % in Europe, and 66 % in the Americas (UNODC, 2014, p. 66). Again, the group of Central and South American countries with extremely high homicide rates report also high proportions of firearm use in the range of 70 % to 80 % (Muggah & Tobon, 2018, p. 28). The USA stands out among the wealthy nations both as a high-violence country as well as the only country with a proportion of gun homicides above 50 %. The situation is less clear-cut in Europe: A positive correlation between homicide frequency and proportion firearms gun use exists in the Balkan region; in contrast, the share of gun-related homicides is generally very low in countries of the former Soviet Union and not linked to homicide levels. While these findings partially support the view that firearms are an important “enabler” of lethal violence (UNODC, 2014, p. 65), a causal link between the availability of guns and homicide frequency has not been conclusively found (see below).

Societal Costs of Homicide

The costs of homicide start with the loss of human lives and the traumata afflicted to witnesses and persons close to the victims. However, homicides also carry monetary and economic costs, impede businesses and reduce the wealth of nations (Soares, 2015). DeLisi et al. (2010, p. 507) have estimated the monetary costs of a single homicide in the USA at 6.5

million \$. Multiplied by 15.000 victims, this would amount to a monetary loss of ca. 100 billion \$ per year. The World Bank (2010, p. 32) reported estimated total costs due to all types of violence of ca. 8 % of GDP for Guatemala and around 10 % of GDP for Honduras and El Salvador, and the projected boost in the economic growth rate for a 10 % decrease in the homicide rate was reported as 0.7 to 1.0 % p.a. Beyond economic effects, excessive homicide rates are likely to decrease trust, social capital and the legitimacy of state institutions among people, and may foster support for authoritarian policies as vigilantism and extra-judicial killings (Nivette, 2016). This cost perspective not only underlines the potential nation-wide benefits of crime prevention but should also alert scholars at the bidirectional effects of violence and socio-economic factors as economic prosperity and social capital when searching for the causes of violence.

Explanations

Concepts and Methods for Cross-National Research

As soon as systematic crime statistics became available in European countries in early 19th century, moral statisticians as Guerry (1833) and Quételet (1835) started to use them as social indicators and relate them to societal conditions. While creating sociology as a scientific discipline, Emile Durkheim used spatial variations in suicide as well as homicide rates for his theory of social integration and regulation during the genesis of modern societies. Since the 1970s, an increasing stream of studies has analyzed the associations of national homicide rates with various social indicators with the ultimate aim to advance the understanding of the causes of lethal violence. Not surprisingly, the research field initially was dominated by well-established criminological concepts, in particular anomie and social disorganization theories which both focus on socioeconomic structure as the “root cause” of crime. Reflecting the

wide spectrum of stages of societal development beyond the industrialized world, modernization and cultural theories have supplemented these classic approaches.

Cross-national analyses of aggregate crime data entail specific conceptual and methodological opportunities and problems. Compared to studies within single countries, the cross-national approach not only increases the variation in homicide rates, but, more importantly, introduces variability of societal contexts which is essential for testing macro-sociological theories of violence (Messner & Zimmermann, 2012). Many aspects of the socio-economic and political structure as income inequality and political legitimacy are genuine properties of nation states, and their potential impact on violence can thus only be assessed using sufficiently large country samples. However, the macro level is, of course, just one of several levels on which social processes are shaped, and thus statistical correlations at the nation-level cannot offer exhaustive evidence to test theories of crime causation. The advantage of cross-national analysis turns into a disadvantage when it comes to the social mechanisms which are assumed to translate macro-level structural conditions into micro-level contexts of violence (Kittel, 2006). Aggregate data analysis is notoriously inapt in shedding light on social processes, and macro-sociological theories of violence tend to neglect the micro-foundation of the assumed effects of structural conditions on individual behavior (Messner, 2012).

To illustrate this fundamental problem with two examples, the Gini coefficient of income inequality and the divorce rate are fairly robust correlates of country homicide rates, but exactly which individuals in which contexts are more likely to use lethal violence due to which proximal causes remains very cloudy in cross-national studies. Scholars usually do not assume that individuals directly affected by a divorce develop an increased likelihood for lethal violence, but rather interpret the divorce rate as an indicator of a weakened normative order in societies at large (Messner et al., 2011: 86). Yet, a valid measurement of this latent

concept is hard to achieve, let alone for many countries. Multinational survey programs as the World Values Survey have been used to fill this gap (e.g. Nivette & Eisner, 2012; Schaible, 2012). Likewise, income inequality is often assumed to instigate feelings of injustice and frustration which according to psychological theories can provoke violent reactions, or according to evolutionary psychology spurs male competition for reproductive success (Daly, 2016). However, it would be reductionist to assume that this mechanism exists in all types of societies, or is the only conceivable mechanism (Chamlin & Cochran, 2005). Again, the assumed micro-level process – the frustration-aggression link or alternative mechanisms – have rarely been tested empirically in cross-national studies.

The majority of studies have used cross-sectional data and multiple regression analysis, often pooling homicide rates of several years for improved robustness. Cross-sectional designs are vulnerable to the problem of omitted variable bias: unmeasured country properties could be confounded with the homicide rate, rendering its associations with predictors spurious. Associations found in cross-sectional models can in most cases not be interpreted as causal, as effects could work in both directions. For example, meagre economic growth or low police legitimacy could instigate violence, but both could also be a consequence of epidemic violence (Soares, 2015).

Since the 2000s, longitudinal designs using fixed effects models or, more recently, random effects models have become widespread. Fixed effects models remove any country differences and focus purely on changes over time of homicide rates in relation to time-variant predictors, avoiding endogeneity and moving closer to the identification of causal effects (e.g. Fajnzylber et al., 2002; Messner et al., 2011). Yet, considering enormous and partly inert global differences in societal conditions, an exclusive focus on time-dynamic effects may impede a comprehensive understanding of country effects on lethal violence (Fearon, 2011). Random effects models which simultaneously estimate between- and within-

country effects seem an interesting solution to this problem, and have become increasingly popular (McCall & Brauer, 2014; Tuttle, 2017; cf. Bell & Jones, 2015).

Longitudinal designs are almost obligatory in order to capture dynamic, non-linear effects on homicide. According to some theories inspired by Durkheim's anomie theory, societal change affects homicide only temporarily before a new balance of social norms and forces is found; two examples are changing family structures (Messner et al., 2011) and the transition to democratic rule (Neumayer, 2003). Also, the same social indicator may represent very distinct processes depending on the temporal dimension. GDP as a cross-sectional and static variable is often understood as an indicator of the level of societal development (including state institutions), while short-term changes in GDP can be seen as an indicator of increasing or decreasing wealth but also of rapid, anomic social change (Neumayer, 2003).

Studies looking for interaction effects (e.g. between social inequality and social support) often overlook the technical problem that multiplicative interaction terms may miss significance levels if the highly skewed homicide rate has been log-transformed, or if negative binomial regression analysis is applied (Greene, 2010; Svensson & Oberwittler, 2010).

Several systematic review articles have in recent years summarized and discussed the current state of cross-national homicide research (Eisner, 2013; Koeppel et al., 2015; Messner & Zimmermann, 2012; Trent & Pridemore, 2012). The reviews by Koeppel et al. (2015) and Trent & Pridemore (2012) include detailed tabular overviews of relevant studies. Nivette (2011a) has published the only meta-analysis so far. The following overview on findings is largely based on these reviews and supplemented by the most recent studies in the field. While most studies use WHO homicide data for the dependent variable, the choice of predictors, the coverage of countries and years as well as the modelling approaches are sufficiently diverse to produce a very heterogeneous picture. No single hypothesis is

supported unanimously in the literature, nevertheless a number of fairly robust findings do emerge.

Deprivation, Inequality, and Welfare Policies

Deprivation and unequal distribution of wealth within societies are among the most extensively studied predictors of homicide, following a long tradition in criminology and influential theoretical perspectives as Robert Merton's anomie theory. As briefly mentioned above, relative deprivation is assumed to provoke feelings of injustice and frustration, in particular if material inequalities are reinforced by ascribed social inequalities and discrimination (Blau & Blau, 1982; Chamlin & Cochran, 2005; Messner, 1989). With some exceptions, the majority of cross-national studies found significant positive effects of the Gini coefficient of income distribution on homicide rates (Koeppel et al., 2015, p. 75; Messner & Zimmermann, 2012, p. 5359; Nivette, 2011a, p. 116; Trent & Pridemore, 2012, p. 128). In one of the most rigorous and most widely quoted studies, Fajnzylber, Lederman & Loayza (2002, cf. Jacobs & Richardson, 2008) confirmed this effect applying fixed effects modeling to a sample of 39 countries (half of them from the industrialized world) and spanning the years 1965 to 1994. A change of income inequality was associated with a corresponding change in homicides, controlling for other influences. The mean effect size of income inequality ranks very high in Nivette's (2011a) meta-analysis, making it one of the most robust predictors of homicide. Yet, some econometricians disagreed, as they did not find causal effects (Chioda, 2017; Neumayer, 2003). It is interesting to note that the recent downturn in homicide rates in Europe and North America seems to coincide with an increase in income inequality.

William Pridemore (2008, 2011) has recently warned that research has unduly neglected the deleterious impact of absolute deprivation over its preoccupation with income inequality. Using the infant mortality rate (IMR) as a widely available indicator of absolute poverty, he found that it outperformed income inequality and rendered the latter non-significant in a reanalysis of previous cross-national studies. Messner, Raffalovich & Sutton (2010) observed that the IMR was a stronger predictor of homicide than direct measurements of absolute poverty but that it may in fact reflect more relative than absolute poverty (cf. Daly, 2016, p. 69). Baumer & Wolff (2014) showed that a substantial part of the global variability in the development of homicide rates between 1989 and, 2008 can be explained by within-country changes of poverty, a composite index of per capita GDP and infant mortality.

Yet, infant mortality may not just reflect material deprivation but carry also cultural dimensions as access to education and gender inequality, two characteristics which may have important effects on violence in their own right. The bivariate correlation between infant mortality rate and the UNDP's gender inequality index was $r = .76$ in a sample of 94 countries (Heirigs & Moore, 2017). This interpretation is supported by epidemiological research on the predictors of IMR showing that it strongly depends on women's access to education independently of material deprivation (Schell, Reilly, Rosling, Peterson & Ekström, 2007). This example illustrates the inherent ambiguity of most macro-level indicators which appear equally suitable for testing competing theories. Crucial dimensions of societal conditions may be distinct theoretically but hard to investigate in isolation as they are closely interrelated empirically.

Several studies have supported the hypothesis inspired by Institutional Anomie Theory that welfare policies intended to "tame" free-market capitalism and alleviate social disadvantage can buffer the deleterious effects of poverty and social inequality (Messner & Rosenfeld, 1997; Pratt & Godsey, 2001, Savage, Bennett & Danner, 2008; Savoleinen, 2000).

Welfare policies compensating for inequalities produced by the free market are often called “decommodification” (Esping-Andersen, 1990). Based on a cross-sectional analysis of data from 30 OECD countries, Rogers & Pridemore (2013, 2017) found a significant negative interaction between welfare expenditures and poverty and concluded: “The strength of the association between poverty and homicide rates is weaker in nations that provide greater social protection to their citizens” (Rogers & Pridemore, 2013, p. 590). A couple of studies have recently confirmed this conclusion analyzing within-country changes (McCall & Brauer, 2014; Thames & McCall, 2014; Tuttle, 2017). However, due to limited data availability, most of these studies have been restricted to OECD or European countries, thus excluding whole world regions with much lower standards of social protection. Also blurring the picture, Nivette (2011a, p. 121) notes the ambiguity of results depending on divergent operationalizations of social policies.

Attempts to factor in cultural dimensions of capitalist societies as the preference for competition and the “fetishism of money” did not yield clear evidence of their assumed anomic impact (Hughes, Schaible & Gibbs, 2015). Elgar and Aikten (2010) found that interpersonal trust was weaker in countries with more social inequality, and that interpersonal trust partially mediated the impact of social inequality on homicide rates. Yet their analysis did not guard against endogeneity, and Baumer & Wolff (2014) did not find an effect of trust in their random effects panel study. Using data from the World Values Survey to operationalize Merton’s anomie theory, Schaible & Altheimer (2016) built typologies of societies characterized by different combinations of materialistic goals and (il)legitimate means to achieve them. Controlling for structural effects, countries with an imbalance between goals and cultural means had higher homicide rates. Chamlin & Cochran (2006) found that a lack of legitimacy of the economic and political system was associated with higher homicide rates, but only in modern countries where “individuals become less willing

to accept the exploitation of social institutions”, thus weakening “the moral authority of conventional norms and values” (Chamblin & Cochran, 2006, p. 249). Finally, the effects of capitalist culture could differ in different world regions according to the study by Antonacchio & Tittle (2007). A factor score consisting of four welfare state indicators interacted with “Eastern religion” (Islam, Buddhism, Confucianism) so that “unrestrained capitalism” was associated with higher homicide rates in Christian countries but with lower homicide rates in countries with Eastern religion, in other words, in Asia.

Economic Development and Modernity

Most studies include single or composite indicators of economic development, if only as a control variable in models focusing on relative deprivation. The most often used indicators are per-capita GDP (or GNP) (also part of the UN Human Development Index), the share of industrial or service sectors, energy consumption, technological infrastructure etc. which are all seen to reflect the complexity and modernity of societal organization which is hard to measure directly. Yet, the distinction between absolute poverty and development seems difficult. All recent review articles conclude that economic development has a rather weak and inconsistent or non-linear impact, yet there is a tendency towards negative, violence-reducing effects (Koeppel et al., 2015, p. 75; Messner & Zimmerman, 2012, p. 5348; Nivette, 2011a, p. 117; Trent & Pridemore, 2012, p. 127). The share of urban population is often used as a separate predictor and generally found unrelated to homicide. It is interesting to note that the homicide rate is negatively correlated with urbanicity in Eastern Europe and the former Soviet Union, but positively in many other world regions (UNODC, 2014, p. 27), potentially cancelling out diverging effects.

Extending the perspective backwards to European history since the Middle Ages, modernization processes have undoubtedly plaid the key role in the “big violence decline”

(Eisner, 2014, p. 67). The transition from traditional, agrarian societies to modern, (post-)industrialized societies was a complex process affecting socio-economic conditions on many levels, and this process is still taking place in other world regions under different conditions. Thus, the arguably most dramatic homicide reduction in world history may have important messages for today's global violence. Emile Durkheim's social theory was one of the first systematic attempts to chart the social consequences of modernization, including the propensity for rule-breaking behavior and lethal violence (DiCristina, 2004; Eisner, 2003, 2013). Quite contrary to the erroneous interpretation of some scholars who associated his views on modernization with disorganization and chaos (e.g. Chamlin & Cochran, 2006), Durkheim (1970 [1897]) predicted that the rise of individualism would *decrease* homicide rates, as long as social relations were controlled by "organic solidarity" and the pace of social change remained sufficiently slow to prevent anomic conditions (Thome, 2007). Durkheim explained higher homicide rates of traditional societies with a prevailing collectivist mindset inducing people to passionately defend their and their family's honor. This hypothesis is congruent with the emergence of the state monopoly of power as a crucial mechanism in Norbert Elias' (1994 [1939]) theory of the civilization process which has become the most widely accepted explanation for the homicide decline (Eisner, 2013, Pinker, 2011). Donald Black (1983, cf. Cooney, 2003) has formulated a generalized theory of the pacifying force of the state monopoly of power: Where it is lacking and for whom it is unavailable, retaliatory violence is the last resort of conflict regulation, and honor is a crucial asset for self-defense (Brown & Osterman, 2012; Elster, 1990). Phenomena as blood feuds and honor killings, as well as homicides related to organized crime, drug markets and gangs can be understood as a consequence of a weak or non-existent state monopoly of power.

As the historic modernization process in Europe has come to a preliminary end in mid-20th century, well before reliable cross-national socioeconomic indicators became

available, there have been very few attempts to test the theories of Durkheim and Elias. Eisner (2014) has recently presented historical time series of cultural phenomena as book production and the spread of literacy which can plausibly be associated with the waves of violence decline. With a view on the ongoing transition processes in poorer and predominately agrarian societies outside Europe, the question arises whether the modernization theories derived from the European experience offer useful analytical approaches. While this question has not been systematically addressed, the violence-reducing effects of GDP growth could be seen as a conformation. Also, some more specific studies lend support to the generalizability of these theories. Karstedt (2006, cf. Stamatel, 2016a) found that collectivist vs. individualistic values predicted cross-national homicide rates around 1970 controlling for GDP and social inequality. Durkheim's theory of anomic violence in times of rapid social change have been used to understand the homicide spikes in Central-Eastern Europe and Russia after the end of Communism (Pridemore & Kim, 2007; Pridemore, Chamlin & Cochran, 2007; Stamatel, 2009).

Demography

Demographic variables are often used in cross-national studies as control variables, and less attention is paid to the theoretical statement and the interpretation of results (Nivette, 2011a, p. 112). However, it is frequently assumed that higher shares of young people and a sex ratio shifted towards males will increase homicide rates since these demographic groups are more likely to commit violence. Surprisingly, there is no robust evidence for this assumption (Koeppel et al., p. 76; Messner & Zimmermann, 2012, p. 5349; Trent & Pridemore, 2011, p. 130). In their systematic review, Rogers & Pridemore (2017b) concluded that the share of young people was not a significant predictor of homicide rates in over 80 % of studies and questioned its routine use as a control variable. As an exception, Baumer & Wolff (2014)

reported strong negative effects in within-country changes of the ratio of persons aged 45-64 to persons aged 15-24. They labeled this ratio “youth oversight” and argued that demographic changes towards ageing populations increase the potential for informal social control over young people.

Against expectation, various studies reported higher homicide rates for countries with a higher ratio of females to males (Antonacchio & Tittle, 2007, p. 944; Rogers & Pridemore, 2013; p. 589; Schaible & Altheimer, 2016, p. 951; Savolainen, 2000, p. 1033), but only Savolainen (2000) speculated that this could be a case of reverse causality (predominantly male homicide victims shift the sex ratio towards women). Barber’s (2009) explanation rooted in evolutionary psychology that men are faced with a stronger mating competition due to more female extramarital sexuality seems speculative and has found no support in the literature. Population growth showed a more consistent association with homicide rates; Countries with higher population growth tend to report more homicides (Messner & Zimmerman, 2012, p. 5349; Trent & Pridemore, 2011, p. 129; Nivette, 2011a, p. 112).

Many studies include the divorce rate as an indicator of social disintegration, yielding very consistent positive effects which ranks fifth – equal to the decommodification index – in Nivette’s (2011a, p. 117) list of mean effect sizes. Messner et al. (2011) argued that the divorce rate signifies not only the disruption of families, but more generally an eroded legitimacy of the social order which may fuel lethal violence. They found robust positive effects of yearly changes in the divorce rate in a fixed-effects panel model spanning the period 1950-2005. Perhaps related to this finding, a measure of traditional family values from the World Values Survey (misleadingly labeled “communitarianism”) had a strong negative effect on homicide rates in Schaible & Hughes’ (2011) study of 46 nations. Qualifying the salience of divorce as an indicator of social disintegration, Stamatel (2009) reported that it

did not impact homicide rates in post-Communist Europe because of diverging pattern of family formation under Communist rule.

Ethnic/Cultural Heterogeneity

Immigration and ethnic or cultural heterogeneity and are often seen as an impediment to social cohesion and potential source of conflict, and are part of classic social disorganization theory. In Europe and North America, the alleged violence-proneness of immigrants from poorer countries often fleeing from large-scale violent unrest or civil wars is a contentious issue in political debates. In the developing world, state boundaries were drawn by the colonial powers without regard to ethnic homogeneity, often resulting in competition and conflicts between ethnic groups. Again, which social mechanisms link macro-level ethnic composition with homicide rates remains an important question. From homicide research in wealthy nations, we know that intra-ethnic homicides (where both offender and victim are from the same ethnic group) are much more likely than inter-ethnic homicides, which may suggest that subcultural rather than conflict theory helps to understand this macro-level association. Disadvantaged ethnic minorities facing problems to integrate into the host society and are socially disadvantaged may turn to local subcultures offering alternative and illegal avenues to social status and economic success.

Most studies measured ethnic or language heterogeneity using the Herfindahl fractionalization index (Alesina, Devleeschauwer, Easterly, Kurlat & Wacziarg, 2003), and the evidence overwhelmingly supports the hypothesis that heterogeneity increases homicide rates (Koeppel et al., p. 76; Messner & Zimmermann, 2012, p. 5350; Nivette, 2011a, p. 117; Trent & Pridemore, 2011, p. 131). Among the most recent studies, Tuttle (2017) and Chon (2017), too, found positive effects of ethnic heterogeneity while Rogers & Pridemore (2017) did not find an effect. Awaworyi Churchill & Laryea (2017) applying an instrumental

variable approach to avoid endogeneity problems found an unexpected negative effect, and de Soysa & Noel (2018) reported that not fractionalization but polarization (which exists if two very large ethnic groups dominate the population) was associated with higher homicide rates. Yet, with a sample size of 140 nations their study may be prone to the problem of imputed data (see above, cf. Kanis et al., 2017). Both de Soysa & Noel (2018) and Baumer & Wolff (2014) considered the influence of recent migration and found a negative or no effect on homicide rates, in accordance with the prevailing evidence from the USA (Ousey & Kubrin, 2018).

Theory suggests that not ethnic heterogeneity as such but its combination with disadvantage matters for violence. In Blau & Blau's (1982) pioneering study using regional data from the USA, the composite predictor "inequality in race" yielded the strongest effect. Messer (1989) used an index of "economic discrimination" that taps into an important dimension of economic inequality based on ascribed ethnic or cultural criteria and found strong positive effects while ethnic heterogeneity had no effect. Avison & Loring (1986) reported that the effect of income inequality was much stronger in countries with higher levels of ethnic heterogeneity, while Altheimer (2007) and Rogers & Pridemore (2017) did not find such interaction effects.

Governance and Legitimacy

Political dimensions have only recently come into focus of global homicide research, following the spread of democratic regimes in Central and Eastern Europe after the end of communism as well as in Latin America and South Africa where military dictatorships and Apartheid regimes were terminated. In the ideal world of political theory, democratic societies should provide people with fair and accountable governments and the rule of law, thus enhancing trust and legitimacy, solving conflicts peacefully and ultimately reducing the

causes for violence (Karstedt, 2006, 2008; Karstedt & Lafree, 2006). Yet, the apparent rise of homicide rates in many recently democratized countries points to the opposite effect.

Modernization and conflict theories try to explain why the transition from autocratic to democratic regimes may either temporarily or permanently increase tensions, instability and anomie leading to higher homicide rates (LaFree & Tseloni, 2006). Much earlier, LaFree (1998) had argued that the crime wave in the USA from the 1960s to the 1990s was the consequence of a loss of legitimacy of core institutions including the economy and the government. Thus, the type of political regime and the degree of trust and legitimacy which it enjoys among the people may be two unrelated dimensions of the political sphere.

Studies which systematically tested the impact of autocratic vs. democratic political regimes as well as of the transitional process using panel data tend to confirm the pessimistic view. These studies added types of government indices as the Freedom House indices (Neumayer, 2003; Stamatel, 2016a) or Polity indices (Awaworyi Churchill & Laryea, 2017; Fearon, 2011; LaFree & Tseloni, 2006) to the existing set of socioeconomic indices to isolate the unique contribution of the political system to the cross-national variation in homicide rates. Fearon (2011) estimated the homicide rate during, 2000-2005 to be 67 % higher in democratic regimes than in autocratic regimes cross-sectionally, and to rise by 22 % during the transition from autocracy to democracy in a panel analysis. Neumayer (2003) as well as LaFree & Tseloni (2006) and Rivera (2016) , cf. Lappi-Seppälä & Lehti, 2014) reported an inverted u-shaped association in which homicide rates initially increased during the transition to democracy before dropping again in fully democratic systems (yet not below the level of autocratic systems). In a panel analysis focusing on Central and Eastern European countries, Piatkowska, Messner & Raffalovich (2016) detected a positive effect of the accession to EU controlling for GDP growth (which reduces homicide rates) and other covariates, implying

that the faster socio-economic change forced onto these countries in order to meet the EU accession criteria may have increased the anomic pressure.

A few studies employed survey data and other data sources to explore the role of “soft” and more specific dimensions of socio-political culture beyond governmental typologies. Stamatel (2016a, cf. Karstedt, 2006) used a combined scale of individualism and egalitarianism alongside the Freedom House democracy index and found that both predicted lower homicide rates in European countries during, 2006-2010, contradicting previous studies. Nivette & Eisner (2012) found that a multi-source index of political legitimacy constructed by Bruce Gilley had a strong negative effect on homicide rates in a cross-sectional analysis of 65 nations controlling for socio-economic indicators. This study lends strong support to the role of legitimacy of state institutions as an inhibitor of lethal violence. Other governance indicators should be used with caution (Fearon, 2011). For example, as part of the World Bank “Worldwide Governance Indicators” (Kaufmann et al., 2010), the “rule of law” index includes data on homicide and other offenses, thus rendering associations with homicide rates tautological (e.g. Lappi-Säpällä & Lehti, 2014; Weiss, Testa & Santos, 2018). The same problem applies to the highly intransparent “International Country Risk Guide” (e.g. de Soysa & Noel, 2018).

Finally, it seems surprising that corruption has rarely been tested as a predictor of homicide, considering the role of corruption in shady business practices and dysfunctional governance. As exceptions, Antonicchio & Tittle (2007) as well as de Soysa & Noel (2018) found that more corruption was associated with higher homicide rates, controlling for other economic indicators.

Guns & Alcohol

Guns as well as alcohol are often seen as “facilitators” or “enablers” (UNODC, 2014, cf. Clarke, 2012) of lethal violence, as situational factors which according to opportunity-based theories play an role in crime causation independent of structural and motivational factors commonly addressed as the “root causes” of crime. Due to this conceptual distinction, the role of guns and alcohol are not being routinely considered in cross-national homicide research, but are the focus of a small and specialized research field.

Nearly half of all homicide victims worldwide were killed with firearms, and the Americas have both the highest homicide rates and the highest proportions of firearm homicides of all world regions (McEvoy & Hideg, 2017, p. 48, see above). This coincidence as well as the extreme outlier position of the USA among the wealthy nations in relation to gun violence have begged the question whether firearms facilitate lethal violence, and whether the availability of firearms has a causal influence on the frequency of homicides. Macro-level research on the effects of varying quantities of firearms and of different regulatory approaches to gun ownership may help to shed light on this important issue, yet cross-national research on this issue has been sparse and inconclusive (Cook, 2018; Stroebe, 2013). Data on gun availability is very patchy, and for obvious reasons the volume of illegal guns which are most relevant for homicides is largely unknown. The proportion of suicides committed with firearms is often used as a proxy measure as it is widely available (Cerqueira, Coelho, Fernandes & Junior, 2018).

Hemenway, Shinoda-Tagawa & Miller (2002) and Killias, van Kesteren & Rindlisbacher (2001) reported an association between gun availability and *female* but not male homicide rates using data from a limited number of developed nations. They argued that guns stored in the household raise the likelihood that spousal disputes end lethally, in line with research showing that gun availability selectively impacts nonstranger homicides (Stroebe, 2016) and is the strongest of all risk factors for intimate partner homicides (Spender

& Stith, 2018). Konty & Schaefer (2012) using a larger country sample and more control variables did not find effects, and the study by Altheimer & Boswell (2012) showed that effects could be conditional on social and cultural context as they found a positive association in Latin America but a negative in Eastern Europe. This result fits to the fact that the country-level correlation between total homicide rates and percentage homicides committed with firearms only exists in the Americas but in no other world region (UNODC, 2014, own computation).

Killias & Markwalder (2012) exploiting detailed case information from the European Homicide Monitor added important insights into the possible mechanisms of gun use. Whereas both legal gun availability and homicide rates are high in Finland compared to the European context, homicides predominantly happen by other means between male acquaintances under the influence of alcohol, whereas in the Netherlands the proportion of firearm homicides is much higher despite low gun availability, often related to organized crime-and presumably involving illegal rather than legal guns. Switzerland is another example of a country with very high gun availability yet a very low homicide rate. In some countries as the USA, reverse causation could be an issue as many people buy guns as a reaction to crime threats (Rosenfeld et al., 1997). More than intentional homicides, accidental killings as well as suicides are major causes of deaths which have been shown to be significantly influenced by the availability of firearms (Kalesan et al., 2017; Levine & McKnight, 2017). The international evidence for homicide reductions following more restrictive firearms regulations is mixed, but Australia, Austria and the USA offer some positive examples (Kalesan, Mobily, Keiser, Fagan & Galea, 2016; König et al., 2018; McPhedran et al., 2018; Santaella-Tenorio, Cerdá, Villaveces & Galea, 2016).

Cross-national studies on the effects of alcohol consumption on homicide rates have been inconclusive. Wolf, Gray & Fazel (2014) and Stamatel (2016b) did not find any effects

of total alcohol consumption or hazardous consumption patterns, while Weiss et al. (2018) and Hockin, Rogers & Pridemore (2018) reported positive effects, the latter study only for beer and spirits but not for wine consumption. Given the relatively clear evidence for a causal link between alcohol consumption and homicides from more sophisticated longitudinal studies in countries as Finland (Lehti, 2014) and Russia (Pridemore & Chamlin, 2006), this state of cross-national research seems surprising.

Gender Differences in Homicide Victimization

The big majority - around 80 % - of homicide victims and 95 % of homicide perpetrators worldwide are male (UNODC, 2014, p. 13). As victim-perpetrator relations are not routinely registered, no systematic cross-national data exist on the prevalence of intimate partner homicides (IPH). Stöckl et al. (2013) estimated that around 14 % of all homicides and 43 % of homicides with female victims were IPHs. The strong gender imbalance in IPH – much more men kill their female partners than vice-versa – is almost an universal truth which has stimulated feminist theories of patriarchal power (Baker, Gregware & Cassidy, 1999) and the “male proprietariness hypothesis” rooted in evolutionary psychology (Daly & Wilson, 1988; Wilson & Daly, 1993). In these perspectives, intimate partner homicides as well as so-called honor killings in traditional, collectivist societies both follow the fundamental motive of controlling female sexuality (Oberwittler & Kasselt, 2014). In a cross-national perspective, interest has focused on the question whether social change and modernization, i.e. towards stronger gender equality, have had beneficial or adverse effects on female homicide rates. While the “amelioration hypothesis” assumes that stronger gender equality reduces victimization risks for women, the “backlash hypothesis” on the contrary predicts that men who resent women’s increasing independence will response with increased violence.

Based on sparse cross-national research, it seems that both women and men profit from increased gender equality, and that no particular effects on female homicide victimization exist. Due to the much larger cross-national variability of male homicide rates, the ratio of female to male homicide victims is inversely related to the overall homicide rate, and in countries with a low volume of lethal violence, up to half of the victims are women, lending superficial support to the backlash theory (see above). Hockin et al. (2018) and Stamatel (2014) compared regression models for male and female homicide rates and found by and large the same effects for both genders. Possibly the only exception is gun availability which has been discussed in the previous paragraph. Gender equality indices had a decreasing effect on both male and female homicide rates (Heirigs & Moore, 2017; Stamatel, 2016), and Chon (2016) did not find significant effects of gender equality indicators on either female homicide rates or the female-to-male homicide ratio when controlling for other structural indicators. Lappi-Seppälä & Lehti (2014, p. 467; cf. Baumer & Wolff, 2014, p. 261; Selmini & McElrath, 2014) concluded that “gender equality seems to go along with general welfare indicators which reduce all types of lethal violence in society, and male victimization decreases then usually even faster than female victimization.”

Homicide and Suicide

Suicide and homicide are two different types of lethal violence, either directed against the self or against other persons. Following the observations by 19th century moral statisticians and Durkheim’s theory of social integration which saw homicide and suicide as opposed expressions of human aggression and predicted homicide rates to decline and suicide rates to increase with modernization, scholars have developed the “Stream analogy of lethal violence” (SALV). SALV assumes that human aggression resembles a stream of water which is nurtured by some common “root causes” but channeled into different directions by social

forces which induce people to either blame themselves or blame others for their misfortunes (Unnithan, Huff-Corzine, Corzine & Whitt, 1994). A couple of cross-national studies have exploited the higher variability of relevant society-level conditions for empirical tests of SALV. Suicide statistics have their own methodological problems and may be even more biased than homicide statistics due to the social and religious taboo against suicide in many traditional countries (Kapusta et al., 2011). Juxtaposing homicide and suicide rates by world regions, the initial impression in fact lends support to SALV as homicide rates are high and suicide rates are low in the Americas and Africa while the opposite is true for Europe, South-East Asia and the Western Pacific region (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002, p. 11). Bills & Li (2005) used WHO data on 65 countries to explore the bivariate correlations between homicide and suicide rates by world regions. While the overall correlation was non-significant, they found negative correlations in the Americas and Asia Pacific, but a strong positive correlation in Europe which was mainly driven by Eastern European countries where both rates are high. Yet, their findings appear to be vulnerable to outliers.

Studies regressing both rates as well as the suicide-homicide ratio (SHR) on socio-economic indicators produced some robust results supporting SALV: Social inequality is associated with higher homicide relative to suicide rates while economic development measured by GDP is associated with higher suicide relative to homicide rates, in line with the interpretation of economic development as an indicator of modernization (Chon, 2013, 2017; He, Cao, Wells & Maguire, 2003; Tuttle, 2017; Unnithan & Whitt, 1992). Fernquist (2002) found that a composite indicator of welfare state interventionism (which he misleadingly labeled “collectivism”) strongly increased suicide relative to homicide rate, and an indicator of religiosity decreased suicide relative to homicide rates, again in line with the predictions made by Durkheim.

Conclusion

A mounting literature has contributed substantially to the understanding of global pattern and trends in homicide, especially over the last decade. Yet, the research field suffers from some hard-to-overcome limitations and a lack of consistency (Nivette, 2011a; Trent & Pridemore, 2012). Data availability in many, especially less developed world regions remains a problem, both for homicide and socio-economic data. Almost nothing is known about Africa and parts of Asia, and estimating the bias in existing data is difficult. Macro-level proxy indicators are often ambiguous and loosely connected to theoretical concepts, and separating the effects of socio-economic and political country attributes may be desirable in theory but difficult to achieve in practice. No country-level effects has remained entirely undisputed, and generalizability across space and time is constrained, partly for a lack of replications. The particular challenge in cross-national homicide research is the need to identify the dynamic and time-varying effects of socio-economic processes while accounting for relatively stable country differences. Only a minority of studies have done this convincingly, and it seems that random effects (within-between) models are preferable to cross-sectional designs.

Having mentioned these conceptual and methodological issues, it would be an undue depreciation of the current state of research to declare the glass half-empty, as Trent & Pridemore (2012, p. 133) have done. There is sufficiently congruent evidence to see the glass half-full, thanks in particular to the first meta-analysis by Nivette (2011a). Some socio-economic and political indicators are robust predictors of country homicide rates: an unfair economic system characterized by poverty, high income inequality and feeble welfare policies fosters violence, and so does social disintegration indicated by ethnic heterogeneity and high divorce rates, as well as low legitimacy of the government system (Nivette & Eisner 2013). The reach of the explanatory power of these structural indicators has been underlined by Baumer & Wolf (2014) who analyzed the homicide trends of 65 nations between 1989 and

2008. Changes in poverty, age structure and political legitimacy could explain ca. 90 % of the cross-country variation in homicide trends.

Still, substantial level differences in lethal violence between world regions remain unexplained after controlling for socio-economic factors. In particular, East Asia has lower and Latin America has much higher homicide rates than expected on the basis of socio-economic conditions alone. Historical and cultural dimensions which are difficult to measure or defy easy quantification – a deficient state building process, a long history of civil wars and military rule, organized crime and drug markets, a machismo mentality – should be considered in addition to socio-economic structures to understand excessive violence in Latin America (Cruz 2016; Huhn & Warnecke-Berger 2017; Rodríguez Ferreira 2016; Word Bank, 2010).

Cross-national homicide research has successfully directed the attention towards the macro-level causes of lethal violence which remain hidden in the large bulk of single-country studies. Countries do not vary in the volume of violence because of a varying number of potential murderers with psychopathological risk factors; on the contrary, the proportion of such perpetrators decreases with the volume of homicide (Eisner 2013). What differentiates high-violence countries from low-violence countries are socio-economic contexts in which homicide more often becomes a strategic option in the views of more people. However, the micro-foundation of macro-level theories of crime causation remains one of the biggest “black boxes”, and more research efforts, i.e. cross-cultural comparative studies, are needed to identify the social mechanisms of violence down to the individual level, and to answer the question whether these mechanisms and risk factors are the same in different types of societies.

Violence Prevention

Global homicide research has some important messages for violence prevention: substantial reductions in homicide rates have taken place in many parts of the world in relatively short time spans, and the scientific knowledge on how societal-level conditions should develop in order to achieve such reductions does exist: Reductions in poverty and income inequality, investments in welfare policies and gender equality, and improvements in the legitimacy of state institutions will help to bring lethal violence down. To whom that appears an over-optimistic scenario, some of these changes have happened in various countries, and with beneficial effects on lethal violence. Eisner & Nivette (2012) demonstrated that it would be possible to reduce the global homicide rate to 2 per 100,000 within 50 years if high-violence countries would achieve an annual reduction of 4 % of their homicide rates. They computed the mean annual reductions of homicide rates in historical and contemporary societies, with results between 3 % in early modern Sweden 4.5 % in Colombia since 1991. The mean annual reduction of homicide rates between 1992 and 2010 were 3.8 % in Asia and 2.8 % in Eastern Europe (Lafree et al. 2015, p. 493).

The importance of socio-economic development for the provision of peaceful and safe living conditions are clearly acknowledged in the United Nations Sustainable Development Goals (LeBlanc 2015). Yet, crime prevention efforts in the international context nevertheless are often directed towards the individual, and in particular towards children and adolescents, following the well-established principles of early interventions (Farrington & Welsh, 2007). On the global level, the WHO is the primary institution organizing prevention campaigns. The latest WHO report includes systematic information on action plans and state provisions for violence prevention in more than 130 countries (WHO 2014), and the World Bank has recently published a comprehensive analysis of violence prevention in Latin America which addresses the important question whether prevention strategies developed in wealthy nations are transferable to other world regions (Chioda 2017; cf. Eisner & Nivette 2012).

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