In the line of fire: firearm violence in Europe

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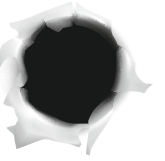
Chapter 2

Theoretical Approaches to Firearm Violence



This chapter aims to review the theoretical knowledge on firearm use in violent encounters and reflect on scientific theories that could explain the use of firearms in violent encounters, as well as the prevalence and nature of firearm violence.

First, this chapter reviews the state of art of scientific theories on violence to evaluate whether those theoretical endeavors include explanations for the use of particular types of weapons in violent encounters. In addition, the idea whether the most dominant theories on violence could be merged into a general theory of violence is explored more in-depth to see whether such a theory is viable and relevant for the study of firearm violence in particular. In the second part, the chapter turns to more specific hypotheses developed about the impact of firearms on the prevalence and nature of violence.

The Theoretical Landscape of Violence

Searching through handbooks of criminology and violence reveals an array of theoretical approaches (see for example Liem & Pridemore, 2012; Piquero, 2015; Zahn et al., 2004). Some of these theories approach violence and violent behavior as a particular type of crime or behavior, such as Strain Theory as coined by Robert Agnew. Strain Theory argues that individuals experience strain when they perceive a discrepancy between their goals and the means to achieve them, with violent behavior being considered a coping mechanism for strains causing negative emotions (Agnew, 1992, 2014). Other theories are general crime theories that are commonly applied to violent crime, such as Routine Activities Theory, which states that crime only occurs when a suitable target, motivated offender and absence of capable guardians converge in time and space (Cohen & Felson, 1979). This theory has been applied to various forms of violence, such as domestic violence (Krishnakumar & Verma, 2021), homicide (Boudreaux et al., 2001; Messner & Tardiff, 1985) or robberies (Ceccato & Oberwittler, 2008). Another example of a dominant crime theory applied to violence is the macro-sociological Social Disorganization Theory (Shaw & McKay, 1942), which states that crime results from the breakdown of social institutions and community structures responsible for developing and enforcing social norms. Social disorganization, commonly measured through rates of poverty, residential instability, ethnic heterogeneity, and family structures, has empirically been used to explain spatial variance in the rates of homicide (Mares, 2010; Vilalta et al., 2021) and other forms of violent crime (Oberwittler, 2004). Given the abundance of crime theories, many other examples could be listed here, which begs the question why such a variety of theoretical approaches is needed or at least applied by violence researchers. There are several reasons:

Existing theories are grounded in a variety of paradigms. The (neo)classical paradigm of crime, for example, emphasizes the free will of each individual, arguing that crime occurs when the incentives of committing a crime are higher than the perceived costs (Beccaria, [1764] 1963; Rock, 2002). Theories such as the Rational Choice Theory (Clarke & Cornish, 1985; Cornish & Clarke, 1986) are grounded in this paradigm: Rational Choice Theory posits that crime occurs when it is in the interest of the perpetrator and when the costs, such as potential imprisonment, do not outweigh the benefits. Other paradigms put less

emphasis on the individual and their actions but instead argue that the (mis)functioning of social structures and institutions shape individual behaviors and thus explain involvement in (violent) crimes. The previously discussed Social Disorganization Theory is one example of a theory that fits with this paradigm. Strain Theory (Merton, 1968), Anomie Theory or Control Theory (Hirschi, 1969), are other examples of crime theories embedded in this paradigm. Yet another paradigm, the critical paradigm in criminology, regards the roots of crime and violence in structural injustices, social inequality and unequal power dynamics in society (Bonger, 1916; Quinney, 1970).

Paradigms such as the ones presented here guide the underlying assumptions of theories on violence. As paradigms differ, so do their related theories, for example in their different key explanatory factors for the occurrence of violence and patterns of offending and victimization. In some theories, such as Rational Action Theory, the perpetrator's behavior is central, whereas other focus on the victim's perspective, situational context in violence occurs or macro-level sociocultural factors facilitating or motivating the use of violence. Yet, those are only paradigms from the disciplines of criminology and sociology. Other disciplines – each with their own paradigms and assumptions – equally study the phenomenon of violence and contribute other theoretical approaches. Neurobiological theories, for example, focus on biological predispositions to violence (Raine, 2002; Siever, 2008), whereas social psychological theories aim to understand how human behavior and social interactions may contribute to aggression or violence (Anderson & Bushman, 2002; Duke et al., 2018). Similarly, other disciplines such as cultural anthropology or pedagogy bring in their own approaches, thereby adding to the theoretical landscape of violence.

Although the sheer number of theoretical approaches to violence suggests an adequate theoretical field, not everyone agrees that the current landscape is sufficient in order to explain why and how violent crime or violent behavior more generally occurs. Some state that existing approaches are insufficient to understand why *violence* occurs, rather than other forms of non-violent crimes or aggression. Randall Collins (2008), for example, criticizes existing theoretical approaches for focusing solely on background factors that may explain why conflicts between people arise or why someone may be motivated to commit violence. Collins maintains that violence is hard and that most people resort to non-violent means to solve conflicts. In other words, none of these existing theories explain the use of violence as a means to an end in itself. In a similar line of reasoning, Jackson and colleagues (2004) condemn that only very few of the dominant theories approach violence as a behavior in itself, but instead see it as an extension of anti-social behavior or a type of crime. Yet another criticism is the mono-disciplinary nature of most dominant violence- and crime theories, meaning that the various disciplinary approaches to violence are not integrated well with each other, but remain separate across disciplines (Liem, 2022; van Breen et al., forthcoming).

Overall, then, the current theoretical landscape on violence may be plentiful but also diffused; a patchwork of theories that individually make relevant contributions to the field, but largely remain separate due to their differences in underlying assumptions or disciplinary perspectives.

Towards a General Theory of Violence?

In 2009, Manuel Eisner and Susanne Karstedt asked the question "Is a General Theory of Violence possible?", in a guest-edited issue of the International Journal of Conflict and Violence. Is it possible to develop a theory that comprehensively encompasses the wide array of types of violence – from bullying to self-harm, bar fights, homicides or even state-level conflict and genocide – and the various approaches to violence – from violence as a type of crime, to a type of behavior or expression of power? The conclusion: there may be some promising integrative approaches but not *one* comprehensive theory of violence. Nonetheless, some scholars have explicitly attempted to develop such a general theory of violence. To give just one example, Randall Collins (2008, 2013) claims that his mainly conceptual and theoretical approach to violence is a general theory that addresses all types of violence – from violence committed by soldiers in the context of war, to robbery homicides or to fist fights between two drunks in a bar. According to Collins, who argues from a micro-sociological perspective, conflicts and the anticipation of violence may lead to confrontational tension and fear. For violence to occur, individuals need to find ways to circumvent this confrontational tension and fear, which may hinder someone from a successful attack due to physiological impacts such as a high hart rate. Collins further differentiates between different types of violence as different pathways to overcome this confrontational tension and fear, such as the pathway to target the weakest victim, or to launch a violent attack from a distance, with a weapon (Collins, 2013). Whilst Collins' theory addresses several of the criticisms on existing theories of crime and violence, it also received criticism: Thomas (2022), for example, argues that Collins' theory may explain micro-situational dynamics leading to violence, but that it does not account for variance of violence across time or space. Others have argued that Collin's theory is too narrowed in its situational approach, thereby neglecting motivations and other precursors to violent events (Wieviorka, 2014).

Other theoretical approaches may not claim to explain all facets of violence, but integrate various approaches, thereby bridging gaps between individual-, circumstantial- and more structural explanatory factors. One example of such an approach is Per-Olaf H. Wikström's Situational Action Theory (Wikström & Treiber, 2009). This framework combines insights and draws on theories from various disciplines, such as individual psychological or biological predispositions to violence, sociological studies of social control and criminological theories. Central to the Situational Action Theory is the idea that criminal behavior is explained by an *interaction* of individual characteristics, the immediate situational environment and the broader societal context which shape opportunities for crime (Wikström, 2014). Although not established to study violent crime specifically, Situational Action Theory has been empirically applied to violence (Trivedi-Bateman, 2021; Wikström & Treiber, 2009). As such, Situation Action Theory may be regarded as an integrative multi-level framework that bridges some, but not all of the shortcomings of mono-disciplinary theoretical approaches to violence. In conclusion then, academics from various disciplines have not produced a theory that can explain the occurrence of all types of violence, across time and space, from the macro- to the micro-level. Several scholars

therefore argue that such a theory may be impossible to develop, and that violence scholars should strive for meta-frameworks that incorporate and generalize existing theories that are currently bound to specific localities or mechanisms (Black, 2004; Eisner, 2009).

Applicability of Theoretical Approaches of Violence to Firearm Violence

To what extent then can current theoretical approaches to violence explain violence perpetrated with firearm in particular? Empirical studies certainly showcase the general applicability of dominant violence theories to firearm violence: Jesenia Pizarro and colleagues (2021), for example, made use of the well-known Rational Choice Theory (Clarke & Cornish, 1985; Cornish & Clarke, 1986) to explain why firearms are used over other weapons in certain circumstances. Similarly, Schildkraut and colleagues (2019) argue that mass shootings (and law enforcement responses to them) can be understood with Cohen and Felson's (1979) Routine Activities Approach. Sociologists may equally argue that certain theoretical approaches about sociological processes and their effects on crime may also apply to firearm violence, such as Social Disorganization Theory (Kubrin & Weitzer, 2003; Shaw & McKay, 1942) or ideas of Collective Efficacy (Sampson et al., 1997) that have been applied to understand varying rates of shootings across street segments (Dalve et al., 2021; Magee, 2020).

However, the explanatory power of these theories for the link between violence and weapons is limited. Currently existing theories on violence rarely focus on *how* violence is produced; there seems to be an underlying assumption that the various means of violence – pure physical power, blunt objects, knives, firearms and so forth – produce no difference in the occurrence and nature of violence. This is in contrast with empirical studies that underline that the absence or use of particular types of weapons matter for the initiation, sequences and outcomes of violent incidents (Phillips & Maume, 2007; Wells & Horney, 2002). Similarly, studies show distinct profiles of perpetrators, victims and circumstances of firearm violence (Pizarro et al., 2021; Schwab-Reese & Peek-Asa, 2019). In other words, the occurrence of violence (or perpetration or victimization thereof) is the dependent variable in theoretical approaches, not how violence is produced, not the use of weapons or a particular type of weapon. Therefore, for a future meta-framework of violence to address not only why, how, by whom and against whom violence is committed, but also how said violence is produced, the theoretical lacunae on the link between weapons and violence and violence production more generally needs to be addressed first.

Eight Hypotheses on Firearm Violence

The theoretical lacunae on the link between weapons and violence may not be filled with broader dominant theories on violence or violent crime. However, some scholars have attempted to address the topics of weapon use through subordinate and less abstract hypotheses. Specifically, eight hypotheses directly discuss the link between firearms and violence. The first five hypotheses discuss the link between firearms and the *prevalence* of violence (see also Table 2.1):

1. Weapon Lethality Hypothesis
2. Weapon Facilitation Hypothesis
3. Weapon Deterrence Hypothesis
4. Weapon Substitution Hypothesis
5. Triggering Hypothesis

The final three hypotheses relate to the impact of firearms on the *nature* of violence:

1. Adversary Effects Hypothesis
2. Physical Strength Hypothesis
3. Social Distance Hypothesis

Not all these hypotheses are well-established, or well-tested, especially regarding geographical or social-cultural contexts other than the United States. Yet, given the overall lacunae of theoretical ideas, these eight stand out from the largely empirical literature on firearm violence. One challenge in reviewing these hypotheses and their connection to the larger body of work is that the names (and to a certain extent, the ideas) of the hypotheses are not well-established yet, meaning that their names are used interchangeably, or that the ideas of these hypotheses are only implicitly studied. This is particularly the case with the Weapon Lethality and Weapon Facilitation Hypotheses (Altheimer & Boswell, 2012; Zimring, 1967). Although both hypotheses link wide availability of firearms to high levels of violence due to technical properties of a firearm, one does based on medical arguments, whereas the other argues that technical properties extend the types of violence that can be committed. Yet, some empirical studies merge both ideas as a comprehensive explanation for the link between firearms and levels of violence (Hepburn & Hemenway, 2004; Hoskin, 2001). To avoid ambiguity in the following chapters of this dissertation, the next sections will elaborate further on the distinctiveness between each hypothesis, as well as their underlying assumptions and ideas. In general, the names of the hypotheses are adapted from the studies who coined them, unless stated otherwise.

Weapon Lethality/Instrumentality Hypothesis

Firearms are objects that have the ability to inflict lethal injuries to individuals, possibly more so than knives, clubs or other types of weapons. In other words, one gunshot to the abdomen leads to a more serious, if not lethal, bodily injury than one stab with a knife or blow with a blunt object to the same body part. In line with this argumentation, researchers have posited the use of a weapon – and a firearm particularly – as an important determinant of the outcome of a violent assault, in particular in assaults in which the lethal outcome or bodily injury of the victim was not premeditated (Braga & Cook, 2018; Zimring, 1967). Zimring (1967) was the first to study the weapon's lethality from a criminological perspective, showing that in Chicago, the firearm lethality rate per 100 assaults was five times as high as the knife lethality rate per 100 assaults. Since then, both criminological and medical research has confirmed the high lethality of firearms in assaults compared to other weapons (Braga et al., 2021; Felson & Messner, 1996; Saltzman et al., 1992).

With the high lethality of firearms established, researchers have conceptually linked the legal (or illegal) availability of firearms on the local, regional or national level with a high prevalence of – in particular – lethal violence (Hepburn & Hemenway, 2004; Zimring, 1967). Under the assumption that widespread availability of a particular weapon is associated with frequent use of said weapon in assaults, high availability of highly lethal firearms should be reflected in high rates of lethal violence. In contrast, in contexts in which firearms are generally less available to civilians, for example due to restrictive regulations, and perpetrators of assaults have to rely on less lethal weapons, the rate of lethal violence should be lower.

The validity of this hypothesis has been found in research that has focused on correlations between firearm availability and (inter)national homicide rates (Altheimer & Boswell, 2012; Hemenway & Miller, 2000; Hepburn & Hemenway, 2004). Studies from the US context generally provide support for the idea that the widespread availability of firearms is correlated with a high prevalence of lethal violence, on the local (Yu et al., 2020) and national level (Monuteaux et al., 2015; Siegel et al., 2013), as well as an increased risk of homicide at the individual level (Anglemyer et al., 2014). However, research has also produced results that warrant a more nuanced look at the relationship between prevalence of firearms and levels of (lethal) violence: for example, domestic homicides are mostly related to legal ownership of firearms, but not illegal ownership (Stansfield et al., 2021).

Unfortunately, less is known about the validity of the Weapon Lethality Hypothesis outside of the US context. In the late 1990s and early 2000s, several studies conducted cross-national analyses across high-income or developed countries, mostly the US, Canada and a number of European countries (Hemenway & Miller, 2000; Hemenway et al., 2002; Killias, 1993; Killias et al., 2001). Consistently, they find a positive association between firearm availability and (firearm) homicide levels yet recognize the United States as an outlier in this analysis. Eliminating the United States from the analysis usually revealed mixed results: Hemenway and Miller (2000), for example, find a positive correlation depends on the measurement of firearm availability once the United States are eliminated from a list of 26 high-income countries. Killias and colleagues (2001) find a positive association between firearm availability and female homicide victimization, but not male victimization. In a more recent analysis, Altheimer and Boswell (2012) find regional variations. Specifically, in Eastern European countries[3], a higher availability of firearm availability was associated with lower firearm homicide and overall homicide rates. Thus, cross-national studies show conflicting results. As such, the applicability of the Weapon Lethality Hypothesis needs to be addressed cautiously for geographical contexts other than the US.

3 Countries included in the category of Eastern Europe are Croatia, Czech Republic, Estonia, Hungary, Kyrgyzstan, Latvia, Lithuania, Moldova, Poland, Romania, Slovakia and Slovenia.

Weapon Facilitation Hypothesis

The Weapon Facilitation Hypothesis is closely linked to the previously discussed Weapon Lethality Hypothesis in that it holds the assumption that a high availability of firearms should be associated with high levels of (lethal) violence. However, instead of focusing on the firearm's lethality compared to other weapons, the Weapon Facilitation Hypothesis entails the idea that the firearm's unique characteristics create new opportunities for (lethal) violent encounters. Specifically, firearms enable perpetrators to inflict (lethal) injury over long distance and to inflict said injury on multiple victims in a short amount of time, as in the case of mass shootings (Lankford, 2016). No other weapon commonly used in interpersonal violent encounters can create similar violence. In addition, these characteristics can enable new types of perpetrators, specifically perpetrators who would otherwise not engage in a physical confrontation with their victims, be it unarmed or with a type of weapon that would require close distance to the victim (Altheimer & Boswell, 2012; Kleck & McElrath, 1991). With new opportunities for (lethal) violence and new perpetrators, the expectation underlying the Weapon Facilitation Hypothesis is that a high availability of firearms should lead to a higher prevalence of lethal violence, compared to (geographical) contexts with lower firearm availability.

Although the ideas of the Weapon Facilitation Hypothesis are implicitly integrated in many theoretical and empirical articles about firearm violence (Hepburn & Hemenway, 2004; Hoskin, 2001), the hypothesis as such is barely mentioned or empirically tested in the academic literature.

Weapon Substitution Hypothesis

The above two hypotheses argue that the firearm's lethality is essential in the outcome of an assault and – in line with this argument – related to the overall homicide rate. However, opponents of the Weapon Lethality Hypothesis contend that it is not the lethality of the weapon at hand, but rather the intent of the perpetrator to (lethally) harm the victim that is the most important determinant (Wolfgang, 1958). Thus, perpetrators who have the intention to kill another individual will do so with or without access to firearms, by substituting the firearm with another kind of weapon (Wolfgang, 1958). As such, the prevalence of firearms should not be the determining factor in explaining the prevalence of (lethal) violence, but rather the intent. Following this reasoning, countries with relative high homicide rates may have low availability of firearms, but a significant number of highly motivated perpetrators. Here, the firearm is given less agency in the violent incident than in the Weapon Lethality Hypothesis. The debate whether the weapon or the perpetrator's intent is more important is also mirrored in the well-known slogan "Guns don't kill people, people kill people", which is often used by pro-gun activists and organizations to argue for lenient firearm legislation.

Only few empirical studies have applied the ideas of the Weapon Substitution Hypothesis. The exact origin of this hypothesis is unclear, as it likely emerged gradually from debates amongst scholars and policymakers during since the late 1950s. One of the earliest studies linked to the Weapon Substitution Hypothesis is by Marvin Wolfgang (1958), who compared

observations from two cities in the 1920s that had similarly high homicide rates, yet large differences in the availability of firearms. Although the ideas of this hypothesis have influenced discussions surrounding firearm regulation, they are also subject of debate due to conflicting empirical evidence. For example, Killias (1993) found no dependency between firearm ownership rates and homicides by means other than a firearm across 14 Western countries, which he considers evidence against the Weapon Substitution Hypothesis. Yet, a causal relationship between perpetrator intent and levels of (lethal) violence have not been established in either of these studies. In fact, only few studies have been able to weigh the use of a firearm against the intent of the perpetrator, mainly because the latter is hard to measure and extract as one of several factors influencing the process and outcome of a violent assault. Two studies have used interviews with perpetrators as a method to understand the role of intent compared to the effects of a firearm on escalations of conflicts (Phillips & Maume, 2007; Wells & Horney, 2002). Both studies have similar findings, namely that the perpetrator's intent is the strongest determinant for the escalation of a conflict, yet the possession of a firearm still has a significant influence on its own. Interestingly, Wells and Horney (2002) also find that although the chances of an escalation increase when the attacker possesses a firearm, the chances of an injurious conflict decrease, meaning that the use of a firearm may decrease further escalation after the initial attack. Taking together, both studies are situated in the middle ground between the Weapon Lethality- and Weapon Substitution Hypotheses, arguing that both intent and firearms matter.

Weighing the empirical evidence for the Weapon Substitution Hypothesis with the Weapon Lethality Hypothesis then, it appears that there is both more and better substantiated evidence for the important role of firearms in explaining the prevalence of (lethal) violence.

Weapon Deterrence Hypothesis

Another criticism to the previously discussed hypotheses is formulated as the Weapon Deterrence Hypothesis. Like the Weapon Substitution Hypothesis, the Weapon Deterrence Hypothesis emerged from debates and discussions about firearm regulation and crime control in the United States, rather than certain theoretical or empirical studies. According to the Weapon Deterrence Hypothesis, a firearm's high lethality should have a deterrent effect on potential perpetrators when confronted with a victim that may also be carrying an equally lethal firearm (Cook & Ludwig, 2006; Kleck & McElrath, 1991).

The underlying assumption made in the Weapon Deterrence Hypothesis is that individuals make rational choices with regards to their actions. In 1986, Cornish and Clarke formulated these assumptions into the Rational Choice Theory, which has been discussed in a previous section. To reiterate, the Rational Choice Theory regards the individual to be free and rational with the ability to make conscious choices, within the boundaries of a given situation (Beccaria, [1764] 1963; Rock, 2002). In the context of crime, Rational Choice Theory proposes that the decision of individuals to engage in crime is based on a cost-benefit analysis (Cornish & Clarke, 1986). In the case of the Weapon Deterrence Hypothesis, perpetrators would make the rational decision not to engage in a violent assault, as the

(potentially lethal) costs of being shot by an opponent who also carries a firearm is too high compared to the benefits. With less lethal weapons, however, the costs may not be high enough to deter the perpetrator from engaging in a violent conflict. Thus, whereas the Weapon Lethality Hypothesis implies that once violence occurs, it is more lethal when committed with a firearm, the Deterrence Hypothesis implies that perpetrators would choose non-violent options to resolve conflicts out of fear of engaging with an opponent who carries a firearm. In other words, violent encounters are less likely to take place altogether. Concretely, this means that a high availability of firearms should be associates with relatively low prevalence of lethal violence or violence altogether.

Similar to the Weapon Substitution Hypothesis, a causal analysis of the Weapon Deterrence Hypothesis would require the measurement of individual cost-benefit analyses and their influence on weapon choice and the considerations made before (not) engaging in a conflict. Such in-depth analyses have yet to be conducted. In certain states of the US, the ideas of the Weapon Deterrence Effect have been incorporated in so-called concealed carry laws, which allow citizens to carry legally obtained concealed firearms in public spaces. These laws have been implemented with the conviction that the deterrent effect of firearms may overshadow negative effects of firearm ownership (Barati, 2016). Empirical studies have evaluated the effects of these laws on rates of (violent) crime to determine whether deterrent effects are stronger than (violent) crime-inducing effects of firearms. Results across these studies vary, depending on type of crime examined and measurements used for both crime rates and concealed carry laws (Barati, 2016; Gius, 2019). Yet, most studies focusing on violent crime seem to find no significant effect of these laws on violent crime rates (Barati, 2016; Dezhbakhsh & Rubin, 1998; Gius, 2019; Hamill et al., 2019; Ludwig, 1998; Nicholas et al., 2020).

The lack of evidence for the Weapon Deterrence Hypothesis may be explained with the faulty assumption that perpetrators make a rational cost-benefit analysis (Barati, 2016). This holds true in particular for violent crimes in which perpetrators may be more likely to act in the heat of the moment, without considering whether their opponents may also carry a firearm or another weapon. Thus, the underlying assumption of (bounded) rational choice may apply less to violent crimes than more pre-meditated forms of crimes, such as theft, rendering the ideas of the Weapon Deterrence Hypothesis not necessarily faulty in itself, but less relevant for violent crimes, at least in the context of the United States. Outside of the United States, similar studies do not exist that evaluate possible deterrent effects of firearm ownership, possibly due to large variations in firearm-related laws that do not compare to those of the United States.

Weapon-as-Primes/Triggering Hypothesis

The previous hypotheses on the link between firearms and the prevalence of (lethal) violence are mostly grounded in the disciplines of sociology or criminology. The Weapon-as-primes Hypothesis – also known as the Triggering Hypothesis – is grounded in the discipline of psychology. One of the underlying assumptions of the hypotheses discussed so far is that firearms facilitate perpetrators to commit violence. However, the Triggering

Hypothesis states that firearms not only indirectly facilitate violence, but that they have a causal impact on the actions taken by perpetrators. Or, as psychologist Leonard Berkowitz argues: "Guns not only permit violence, but they can also stimulate it as well. The finger pulls the trigger, but the trigger may also be pulling the finger" (Berkowitz, 1968, p. 22).

The underlying assumption of this hypothesis is that our brains connect concepts with each other based on our experiences (Benjamin & Bushman, 2016; Berkowitz, 1990; Todorov & Bargh, 2002). In the context of gun violence, the concept of firearms can be linked in the semantic memory with aggression- or violence-related concepts, due to events that pair both concepts, such as news about public shootings, movies that depict firearm violence, video games or personal experience. In 1967, Berkowitz and LePage published the results of what is considered the first experiment on the so-called weapon effect. The main question that is addressed by Berkowitz and LePage is whether the presence of a weapon increases aggressive thoughts, feelings and possibly behavior. Berkowitz and LePage, and many other researchers after them, have found empirical support for this hypothesis and the weapon-effect is a generally accepted term in modern psychology today (Benjamin et al., 2018). Based on the findings of 78 studies, a meta-analysis concludes that seeing weapons (that includes firearms, knives and other weapons, both pictures and real weapons) activates aggressive thoughts in most participants, which in return can lead to more aggressive behavior (Benjamin et al., 2018).

Consequently, it can be stated that the presence of a firearm might be enough to activate aggressive thoughts, which can lead to aggressive feelings and possibly behavior, meaning that the firearm itself is (one of) the causal mechanism(s) behind the violence committed with it.

Table 2.1: Overview of theoretical approaches to the impact of firearm on prevalence of violence

	Weapon Lethality	**Weapon Facilitation**	**Weapon Substitution**	**Weapon Deterrence**	**Weapon-as-Prime/ Triggering**
High availability = high prevalence	x	x			x
High availability = low prevalence				x	
No impact of availability of prevalence			x		

Whereas these hypotheses all relate to the question how firearms may impact the prevalence of (lethal) violence, other approaches relate more to the impact of firearms on the nature of violence that occurs. As such, the following hypotheses are not disputing or counterarguing the impact of a firearm on the lethal outcome of a violent encounter, but rather discuss under which circumstances a firearm is more likely to be used.

Adversary Effects Hypothesis

The Adversary Effects Hypothesis rests on the ideas of the Rational Choice Theory (see previous section) and the Social Interactionist Approach. The Social Interactionist Approach to violent crime emphasizes that individual behavior is shaped by social interactions, for example between victims and perpetrators, and the social environment in which it occurs (Felson, 2018; Felson & Tedeschi, 1993). It has been proposed that violence has three main functions within these social interactions: to ensure compliance from the victim, to punish the victim for perceived injustices or for the perpetrator's social status (Berg & Felson, 2019; Felson, 2018). Next to these motives, physical or verbal interactions between victim and perpetrator may determine the use of (certain) types of violence. In other words, violence is purposive.

The Adversary Effects Hypothesis is built on both of the above approaches, arguing that perpetrators (more or less) rationally calculate the adversary's coercive power in relation to their own power and adapt their tactics when engaging in violent conflicts (Felson & Hullenaar, 2021; Felson & Painter-Davis, 2012; Felson & Pare, 2010). Specifically, Felson and Hullenaar (2021) argue that the adversary's perceived power may impact target choice, the intent to kill the adversary to avoid possible retaliation, the use of allies in the conflict and – most relevant to this dissertation – the use of weapons. Specifically, the Adversary Effects Hypothesis holds that the use of a weapon generally and firearm in particular is more likely when the perpetrator perceives weapon use necessary to overpower the adversary, for example to avoid physical resistance during the violent encounter. Thus, the firearm is a tool to equalize or turn disadvantageous power relations into a favorable position for the perpetrator. Furthermore, weapon use is based on a rational calculation of the firearm's additive power to the power balance between perpetrator and adversary. As such, the ideas of the Adversary Effects Hypothesis are closely related to the Weapon Facilitation Hypothesis, which argue that firearms enable perpetrators to commit violence they would not commit without the use of a firearm.

In practice, what follows from this hypothesis is the expectations that firearm use is more likely in violent encounters in which the perpetrator's adversary displays certain characteristics that are threatening to the perpetrator, such as their gender, other personal attributes, a habit of weapon-carrying, a history of retaliations and more (Felson & Hullenaar, 2021; Pelletier & Pizarro, 2019). Empirically, power relations between the perpetrator and adversary are difficult to measure on the level of each violent encounter (Felson & Painter-Davis, 2012). Thus, the few empirical studies that assessed weapon use in the context of the Adversary Effects Hypothesis mainly used victim characteristics as a proxy for the adversary's power, such as their gender (Altheimer et al., 2019; Felson & Hullenaar, 2021), race (Altheimer et al., 2019; Felson & Pare, 2010), or criminal propensity of an adversary, e.g. due to affiliation with a gang (Altheimer et al., 2019). Findings of these studies are generally consistent with the predictions of the Adversary Effects Hypothesis in that perpetrators were more likely to use firearms than no weapons in assaults and homicides when the victim is male or Black (Felson & Hullenaar, 2021; Felson & Pare, 2010). In addition, a disproportionate amount of shots fired were more likely when the

victim also had a weapon, which could have been perceived as a threat by the perpetrator (Altheimer et al., 2019).

Other empirical studies, although not explicitly empirically testing the Adversary Effects Hypothesis, also support the notion that certain victim characteristics are more likely to be associated with violence committed with a firearm than any other weapon. These studies consistently find that firearm use over no or another type of weapon is more likely when the adversary is male (Fox & Allen, 2014; Libby, 2009), Black (Libby, 2009; Pelletier & Pizarro, 2019) and has an indication for a criminal past (Pelletier & Pizarro, 2019). The age of the victim has not yielded consistent results, with various age groups across studies showing increased risks of being attacked or fatally shot with a firearm (Allen & Fox, 2013; Libby, 2009; Pelletier & Pizarro, 2019).

Overall, although not tested widely, the Adversary Effects Hypothesis finds empirical support in studies in the context of the United States. Like the previous hypotheses, the Adversary Effects Hypothesis has not been applied to empirical contexts outside of the United States so far. The question remains whether certain dynamics proposed in the hypothesis – such as the role of race – are equally applicable elsewhere, or whether those ideas are context-dependent. Equally context-dependent may be the accessibility of firearms which is taken as a given in both theoretical and empirical studies on this hypothesis.

Physical Strength Hypothesis

Closely related to the Adversary Effects Hypothesis is the Physical Strength Hypothesis, as coined by Heide (1993) and implicitly by Wolfgang (1958). The Physical Strength Hypothesis entails that a weapon – and firearm in particular – enable perpetrators with less physical power than their opponent to engage in non-physical violence from a distance. Thus, similar to the Adversary Effects Hypothesis, the firearm is seen as a tool to rebalance power-relations between victim and perpetrator, yet with the Physical Strength Hypothesis, the physical power and the firearm's particular ability to inflict violence from a distance lie at the core of the argument.

To test the Physical Strength Hypothesis empirically, one requires detailed information on the physical strength, such as height and weight, of victim and perpetrator, as well as the decision-making process leading up to weapon use. As such detailed and disaggregated data is rarely available, physical strength has mainly been operationalized through gender- and age-differences between victims and perpetrators. Specifically, Heide (1993) tested the assumptions of the Physical Strength Hypothesis first in the context of parricides, arguing that fathers, due to being male and older, should be more likely to be assaulted or killed with a firearm than mothers and that younger perpetrators should be more likely to use a firearm.

These assumptions are supported in empirical studies: Young perpetrators are more likely to use a firearm to kill their (step)fathers compared to their (step)mothers (Heide, 1993). Furthermore, young perpetrators are more likely to use a firearm compared to their adult counterparts. Similar support for the hypothesis is found in other studies on domestic violence (Heide & Petee, 2007), as well as sexual homicides (Chan & Beauregard, 2016; Chan et al., 2019). Yet, critical voices have pointed out the reliance on ideas of rational

choice, that weapon use in spontaneous violent encounters may be driven by situational availability, rather than a conscious evaluation of the opponent's physical strength (Shon, 2010). In addition, one may question the operationalization of physical strength through gender and age, as physical strength within each gender or age group can vary widely.

Social Distance Hypothesis

The Social Distance Hypothesis is similar to the Adversary Effects and Physical Strength Hypotheses in that it focuses on the question in what circumstances a firearm is used over another type of weapon, or no weapon at all. However, opposed to those hypotheses, Social Distance Hypothesis is not grounded in the paradigm of rational choice, but pure sociology.

Pure sociology, as developed by Donald Black (1979), is a paradigm that does not put the individual, a group or even state as the unit of analysis, but social life and interaction in itself. In this paradigm, social life takes place in a multidimensional space in which the dimensions consist of the extent of social interactions, inequality of resources, the degree of organization of social life, culture and, finally, social control and norms (Black, 1976). Each social interaction can thus be placed across these dimensions in the space. Following this reasoning, violence – as a form of social interaction – may thus take on varying forms, depending on its position within the geometrical space. For example, violent interactions between individuals from different cultures and that hold different norms would show different characteristics than violent interactions between family members who share similar cultural and normative beliefs.

Building on the ideas of pure sociology, Donald Black (1993, 2004) argued that the prevalence and seriousness of retaliatory violence increases with relational and cultural distance between victim and perpetrator. Relational distance relates to familiarity, for example family members, acquaintances, or strangers. Cultural distance refers to the similarity in cultural and moral values, linguistics, religious beliefs and more. The combination of relational and cultural distance is referred to as social distance. Black later applied this idea to weapon lethality (2004), arguing that more lethal weapons are used in retaliatory violence between individuals or groups who are more socially distant to each other. In other words, close friends are more likely to use physical violence, such as their fists, whereas strangers are more likely to use firearms. Initially, Black's arguments focused on violent interactions as a form of social control, such as retaliatory violence; he used mostly anecdotal ethnographic accounts from conflicts from medieval Europe to modern-day tribal societies to support his theory. Cooney (2006) later expanded these ideas to predatory violence – violence committed for the sake of exploitation of a person or for financial gains. Finally, Rennsion and colleagues (2011) brought together the ideas of Black and Cooney, simplifying their assumptions in relation to weapon lethality to the following hypothesis: "Weapon lethality increases as the social distance between offender and victim increases" (p.584).

Empirically, this hypothesis has not received much attention in relation to weapon lethality. Rennsion and colleagues (2010) only found mixed support for their hypothesis that firearm use was more likely in conflicts between socially distant individuals. Other

studies – without intentionally testing the Social Distance Hypothesis – support the notion that firearms are used more often in (lethal) violence between strangers, compared to family members or other acquaintances (Fox & Allen, 2014; Pelletier & Pizarro, 2019; Pizarro et al., 2019; Thomas et al., 2011; Trojan & Krull, 2012). However, the idea that cultural distance between victim and perpetrator – measured through difference in race – determines weapon use has found no support, neither in the study by Rennison and colleagues (2010), nor in other studies empirically examining weapon use and race-dyads (Caines & Brown, 2023; Jacques & Rennison, 2013).

Next to varying degrees of empirical support for the Social Distance Hypothesis, the underlying premises of pure sociology have been embraced by some (Cooney, 2009; Michalski, 2008), as well as criticized harshly by others. Marshall (2008), for example, critiqued Donald Black's demands for a 'pure' sociological paradigm that ignores individual-level psychological aspects. From the perspective of weapon use, one could indeed question whether Black's paradigm of pure sociology can fully capture aspects found to be relevant in explaining weapon-carrying and weapon use, such as individual perceptions of danger and fear (Brennan & Moore, 2009).

Conclusion

This chapter has reviewed several theoretical approaches to violence, as well as specific hypotheses related to the prevalence and nature of violence committed with firearms. However, the current state of theoretical knowledge is far from satisfactory when confronted with the task of studying firearm violence in Europe. Theories related to violence more generally, as reviewed in the first part of this chapter, rarely embed the modes and means through which violence is produced in their ideas and assumptions. Thus, they answer questions such as *Who commits violence for what reason?* or *When and where is violence most likely to occur?*, but not *Why is violence sometimes committed with a firearm rather than another weapon?*, or *How does the use of a firearm change the nature of violence?*. Whilst still relevant and applicable to firearm violence, the firearm itself is not the focus of any of these theories, but rather seen as an interchangeable object.

Specific hypotheses regarding violence perpetrated with firearms have their own caveats. Although relatively few in number, these hypotheses are barely integrated with each other, or theoretically well-developed. On the one hand, this may be due to the difference in paradigms: the Social Distance Hypothesis, for example, builds on the ideas of pure sociology and violent structures, whereas the other hypotheses are more or less implicitly based on ideas of rational choice with a focus on the individual. At the same time, however, there are few explicit connections made to broader theories on violence or violent crime, which could be used as a backbone to integrate these hypotheses. In addition, ideas from these hypotheses may be incorporated in many empirical studies on firearm violence, but rarely explicitly tested. The Adversary Effects Hypothesis, for example, has almost exclusively been tested by the researchers from whom this hypothesis originates (Felson & Hullenaar, 2021; Felson & Painter-Davis, 2012; Felson & Pare, 2010). The hypotheses'

validity for the context for which they were created – firearm violence in the United States – thus remains questionable in some instances.

Another dilemma is the broader generalizability of these hypotheses to other geographical and cultural contexts. All of them have been developed and tested in the context of the United States, which in the context of firearm violence and -availability has been dubbed an outlier when compared to other geographical and socio-political contexts (Hemenway et al., 2002; Killias & Markwalder, 2012). Similar applications of these hypotheses to contexts outside the United States are almost non-existent, which raises questions over the overall validity and generalizability.

The following chapters include empirical observations of firearm violence in the European, and particularly the Dutch, context. Chapter three and five explicitly pick up on the hypotheses presented in this theoretical chapter, to evaluate their useability for explaining relationship between firearms and the prevalence and nature of (lethal) violence in Europe and the Netherlands. The final chapter further includes a broader discussion about the theoretical ideas presented in this chapter in the light of the empirical findings of this dissertation.