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When does a provocation demand a violent response? A randomized scenario study of the code of the street

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Abstract

Elijah Anderson’s seminal work on the “Code of the Street” details how individuals use violence to defend and gain respect in violent neighborhoods. We provide his account with choice-theoretic foundations to derive hypotheses on how individuals’ willingness to use violence depends on their street code beliefs, the strength of provocation, and their exposure to violence in their neighborhoods. Using data from a survey of 10th graders in 46 schools across five neighboring cities in Germany, we examine violent intentions in a neighborhood-based scenario that randomly varied the strength of provocation. To measure the level of violence in respondents’ neighborhoods, we link geo-coded police-recorded data. While provocation strength generally increases violent intentions, adolescents who reject the street code and live in low-violence neighborhoods report no violent intentions even when strongly provoked. Conversely, among adolescents with strong street code beliefs, responses to provocations vary depending on their residential environment.

Keywords Code of the street · Youth violence · Neighborhoods · Rational choice theory · Randomized scenarios

Introduction

Social contexts and particularly neighborhoods occupy a prominent role in the explanation of juvenile delinquency and youth violence (Chang et al., 2016; Sharkey & Faber, 2014). In studying such influences, it is important to recognize that adolescents are differentially affected by their residential contexts (Oberwittler, 2007; Sharkey &

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Faber, 2014; Wikström et al., 2012). Young people who reject violence may still need to navigate violent neighborhoods, while those who have come to normatively accept violence also need to consider the opportunities and risks of fighting. However, empirical studies of youth violence rarely offer a systematic analysis of socially embedded decision-making (Sharkey & Faber, 2014, p. 569).

In this article, we contribute to this task both theoretically and methodologically. Our starting point is Elijah Anderson's seminal work on the "Code of the Street" (1999). Anderson (1999) argued that, especially in disadvantaged areas with precarious law enforcement, a system of informal rules emerges that guides interpersonal and public behavior, including the use of violence as a means to secure and gain respect (Anderson, 1999, p. 33). Importantly, individuals differ in the extent to which they have internalized street values. But the extent to which the code of the street governs their behavior depends also on characteristics of the situation, as well as on the wider social context.

A first limitation of previous large-scale studies in this area has been the inability to examine the interplay of all three sources of variation. Most research has examined how individual street code beliefs are related to violent offending and whether this relationship varies across groups or contexts (Berg et al., 2012; Brezina et al., 2004; Markowitz & Felson, 1998; Moule & Fox, 2020; Stewart et al., 2002; Stewart & Simons, 2010; Taylor et al., 2010). For example, Stewart and Simons (2010) found that individuals' street code beliefs were more strongly associated with violence in neighborhoods where street culture is more pronounced. But like most other studies, their analyses do not take into account *situational* sources of variation (Moule & Fox, 2020, p. 241). Situations are more or less likely to result in provocations, and these provocations vary in their strength and the extent to which they may seem to require or justify a violent response (Bernasco, Ruiter, & Bruinsma, 2013; Weerman, Bernasco, & Bruinsma, 2015; Osgood, 2023). Failing to take this situational variation into account may bias estimates of how individuals' street code beliefs and characteristics of their residential environments interact – especially since exposure to different situations can be expected to depend on the neighborhood individuals live in, their tendency to seek or avoid particular situations, and chance events.

To address this shortcoming and to control for otherwise unobserved situational influences, we use a hypothetical scenario that randomly varied the strength of provocation (Bouffard & Niebuhr, 2017; Exum & Bouffard, 2010; Nagin & Paternoster, 1993; van Gelder et al., 2019; Wikström et al., 2012). This method avoids the problem that actors self-select into more or less criminogenic situations (Haynie & Osgood, 2005; Wikström & Kroneberg, 2022). As a methodological innovation, we situated the randomized scenario in respondents' neighborhoods. Combining this scenario with contextual measures of neighborhood exposure to violence, we investigate how the readiness to use violence in response to provocations varies depending on characteristics of the situation and the broader residential environment. Our study thereby contributes to a broader, contextualized study of exposure to violence (Sharkey, 2018).

A second limitation of large-scale studies on the code of the street concerns theory development. Anderson's account has been highly original and influential, but is not well-connected to other, more general theories of human behavior and decision-making in social contexts. To prepare the ground for such links and to allow for a

more systematic theoretical analysis, we re-construct central elements of Anderson's account based on more explicit choice-theoretic micro-foundations (Matsueda, 2017; Messner, 2012). As we show, even though Anderson's theory originates in a different intellectual tradition, it is very much compatible with choice theories of crime. Using a simple model of provocation and response allows us to derive hypotheses on how respondents' reported willingness to use violence depends on their street code beliefs, the strength of provocation, and the exposure to violence in their neighborhoods.

Our data come from a large-scale criminological survey of 10th graders in 46 schools located in five neighboring cities in Germany. The study area was characterized by the downturn in coal and steel production, high population density, high levels of ethnic diversity, and high levels of unemployment, making it a suitable site to study the role of street code beliefs for youth violence in Europe (Heitmeyer et al., 2019).

Results mostly confirm theoretical expectations. Respondents report stronger violent intentions when they agree more strongly with the code of the street and when confronted with a stronger provocation in the scenario. Living in a neighborhood characterized by a higher incidence of violence is also associated with stronger violent intentions, although this relationship is non-linear and levels off after a certain number of recorded assaults. Most importantly, we find support for the predicted three-way interaction of these individual, situational, and environmental variables: Respondents who strongly agree with the code of the street report violent intentions in response to a strong provocation scenario. On the other side of the spectrum, those who hardly believe in the code never report violent intentions when facing only a weak provocation in the scenario. The broader residential environment becomes most relevant when there is a mismatch between actors' cultural orientations and the demands of the situation. Specifically, we find that when youth who are strongly attached to the code get only mildly provoked, they still tend to report violent intentions – but only if they live in a violence-promoting neighborhood.

Based on our choice-theoretic reconstruction of Anderson's ideas, we interpret this interplay as reflecting how the environment shapes the incentives of street-oriented youth (Matsueda et al., 2006; Thomas et al., 2022). While violence-promoting neighborhoods tend to reward violence and imply reputational losses when avoiding a fight, there is less need to signal a readiness to defend oneself, and violence tends to get informally sanctioned in low-violence neighborhoods.

Theory and previous research

The code of the street: from ethnographic case study to general theory

Anderson (1999) originally developed his theory based on ethnographic research on inner-city African American youth in Philadelphia. As a consequence, some elements of his account are context-specific, such as the association of the code of the street with illegal businesses, fights for territories, or lethal violence (Heitmeyer et al., 2019). However, as Anderson (1999) noted himself, the essence of the street code – violence as a reputational strategy in contexts of marginalization – is not exclusive to his empirical site, but can be traced back to the Roman empire (Anderson, 1999, p. 84).

Several studies have shown that the code of the street, as a system of informal rules, also exists in other contexts.¹ Within the U.S., Keith and Griffiths (2014) found that delinquent youth in suburban and rural Georgia endorsed street code beliefs just as strongly as their urban counterparts. Other studies suggest that “the code of the street is also relevant” to understanding youth violence in Europe. In the Netherlands, McNeeley and Hoebe (2017) found that adolescents in The Hague who endorse street code beliefs were significantly more likely to engage in violent behavior, particularly when they frequently socialize in public, unstructured settings. Their findings “demonstrate the utility of the theory in explaining violence in international contexts without the degree of neighborhood disadvantage present in many major U.S. cities” (p. 647).

In a recent qualitative study in Austria, Schmollmüller et al. (2025) found that young chronic offenders frequently described violence as a legitimate way to gain or defend respect within peer groups. One interviewee succinctly summarized this imperative: “Let’s say someone challenges you, ‘Come on, one-on-one,’ and you don’t go - then you’ve already lost your honour. You’re not a man” (p. 50, translated from German).

As part of their cross-cultural research in Germany, Pakistan, and South Africa, Heitmeyer et al. (2019) studied youth in high-risk neighborhoods in Dortmund-Nordstadt and Duisburg-Marxloh - both located in Germany’s Ruhr area, in which our study also took place. Here, too, young respondents described violence as a “commonplace means to settle matters” and noted that “disrespect is countered with violence” (p. 127). The study concludes that “young men with the street knowledge can read the situation and behave accordingly,” allowing them to avoid victimization and command respect (p. 150). Hence, without denying cross-cultural differences, signaling an ability to fight to gain and retain respect seems to be a core element of the code of the street in violent neighborhoods.

Quantitative evidence on the code of the street in neighborhoods and schools

While some aspects of the code of the street – such as differences in code switching – are most accessible to qualitative studies, survey research has been used to examine individual differences in street code beliefs, their association with projected or actual violent behavior, as well as the role of the wider social context therein (Berg et al., 2012; Brezina et al., 2004; Markowitz & Felson, 1998; Stewart et al., 2002). As shown in a meta-analysis, individual belief in the code of the street has been consistently found to be related to offending, especially for violent offending and among adolescents (Moule & Fox, 2020). Moreover, while Anderson’s theory was grounded in ethnographic research in inner-city African American neighborhoods in Philadelphia, studies also documented the relevance of street code beliefs in other contexts and countries (Beier, 2016; Ernst & Lenkewitz, 2020; Keith & Griffiths, 2014; McNeeley & Hoebe, 2017).

¹ Using Anderson’s work as the starting point of a more general theory of violence arguably yields a “flattened” or “decontextualized” perspective (Fader & León, 2024, p. 29). Still, it is a worthwhile research agenda that complements richer, but also contextually more specific accounts afforded by ethnographic field studies (Heitmeyer et al., 2019).

In the United States, Stewart and Simons (2010) found that individuals' code internalization is more strongly associated with violence in neighborhoods where street culture is more pronounced. Using the same data, Berg and colleagues (2012) showed that this measure (i.e., the neighborhood-level mean of street culture) ceased to be relevant, after controlling for the degree of disagreement regarding this measure. Arguably, this dispersion in street code beliefs ("cultural heterogeneity") partly captures the presence of a group who strongly believe in the code of the street. In such neighborhoods, rejecting the code of the street did no longer reduce adolescents' violent delinquency.

Ernst and Lenkewitz (2020) examined the code of the street in German secondary schools and measured the extent to which physical aggression towards other students is associated with more or less popularity in the grade. They found that students with strong street code beliefs tended to engage in more violence in school grades where violence is associated with elevated status. In contrast, students who disagreed with the street code rarely behaved violently, irrespective of the status-violence norms in their school grade. This latter finding differs from the results of earlier studies which suggest that individuals with weak street code beliefs may also be influenced by their broader social context (Berg et al., 2012; Stewart & Simons, 2010).

One source of such mixed findings may be the lack of data on *situational* determinants of violence. In their everyday life, individuals are differentially exposed to situations that may lead to violence and such situations also vary in their level of provocations and the extent to which they may seem to require or justify a violent response (Bernasco, Ruiter, & Bruinsma, 2013; Weerman, Bernasco, & Bruinsma, 2015; Osgood, 2023). To be sure, individuals' moral beliefs and residential environments will be important determinants of how frequently they find themselves in particular situations. Still, one can expect additional, independent sources of variation that – if unobserved – may bias estimates of how individuals' street code beliefs and characteristics of their residential environments interact. For example, even though individuals' street code beliefs may affect their self-selection into different friendship groups and micro settings and reflect corresponding socializing influences (Haynie & Osgood, 2005), there will be residual variation in where, with whom, and how they spend their time.

Thus, most previous quantitative studies on the code of the street were not able to examine the interplay between all three sources of variation: how individuals' street code beliefs and characteristics of their neighborhoods interact with the requirements of particular situations. One way to control for otherwise unobserved situational influences is randomized scenarios (Bouffard & Niebuhr, 2017; Exum & Bouffard, 2010; Nagin & Paternoster, 1993; van Gelder et al., 2019; Wikström et al., 2012). Combined with data on respondents' street code beliefs and characteristics of the broader social context, such scenarios allow for a more comprehensive study of the working of the street code.

The only study that has followed this path is Beier's (2016) analysis of survey data from German secondary schools. Based on a bus stop scenario (see already Wikström et al., 2012), he analyzed violent intentions in response to provocations of different strengths. This study showed that respondents with strong street code beliefs reported violent intentions in response to strong provocations and respondents with weak street code beliefs reported no violent intentions in ambiguous situations – irrespec-

tive of their classroom context. Moreover, using data on response latencies, it was found that respondents answered faster in situations where the strength of provocation was in line with their street code beliefs. The contextual prevalence of street code beliefs in a school class proved relevant only in the other constellations: motivating respondents with strong street code beliefs to respond violently even to an ambiguous provocation, or pressuring respondents who disagree with the street code to consider a violent response when being strongly provoked.

While Beier's (2016) study focused on contextual variation across school classes, we remain closer to Anderson's original theory by examining the role of adolescents' neighborhoods. Moreover, we use a novel scenario that aims to immerse students in their individual neighborhoods in which the fictitious provocation is taking place. Before we present our research design, we provide a choice-theoretic reconstruction of Anderson's theory.

A choice-theoretic reconstruction of the code of the street

Even though Anderson's theory originates in a different intellectual tradition, it is very much compatible with choice theories of crime. From a rational choice perspective, Anderson's description of how individuals with different (unobservable) preferences adjust their behavior in violent settings to gain respect and avoid victimization is a clear case of strategic interaction. This idea of violence as a signaling mechanism resonates also with other sociological accounts (e.g., Benard, 2013, 2015; Gambetta, 2009; Gould, 2003).

Providing Anderson's theory with more explicit choice-theoretic micro-foundations has several advantages. First, it helps to connect this line of work to other disciplines and fields in the social sciences. Second, it allows for a more transparent explication of assumptions and systematic derivation of hypotheses. This also helps to identify directions for future research and to integrate findings across studies. Finally, such a theoretical analysis allows for a tight coupling with the scenario method. While scenarios are often employed in criminological surveys (Bouffard & Niebuhr, 2017; Exum & Bouffard, 2010; Wikström, Oberwittler, Treiber, & Hardie, 2012), they are rarely given an explicit choice-theoretic interpretation. This is surprising since scenarios that describe a provocation and ask respondents how they would respond mirror a basic strategic situation that has been studied in game-theoretic contributions (Szekely & Gambetta, 2020).

Figure 1 presents such a simple provocation game that we will use to derive hypotheses on how respondents' reported willingness to use violence depends on their street code beliefs, the strength of provocation, and the exposure to violence in their neighborhoods.

In this stylized sequence, Player 1 either ignores the other player, which leaves them with the status quo, or provokes Player 2. Our theoretical and empirical analysis focuses on Player 2's reaction to this provocation. Again, we keep things simple by distinguishing only between two action alternatives: Either Player 2 responds violently and fights, or backs down and avoids a fight. If Player 2 avoids the fight, the player loses the confrontation between the two individuals. We denote the resulting payoff of avoidance as $U_2(\text{loss} \mid \text{no fight})$. If Player 2 chooses to fight, there is a subjec-

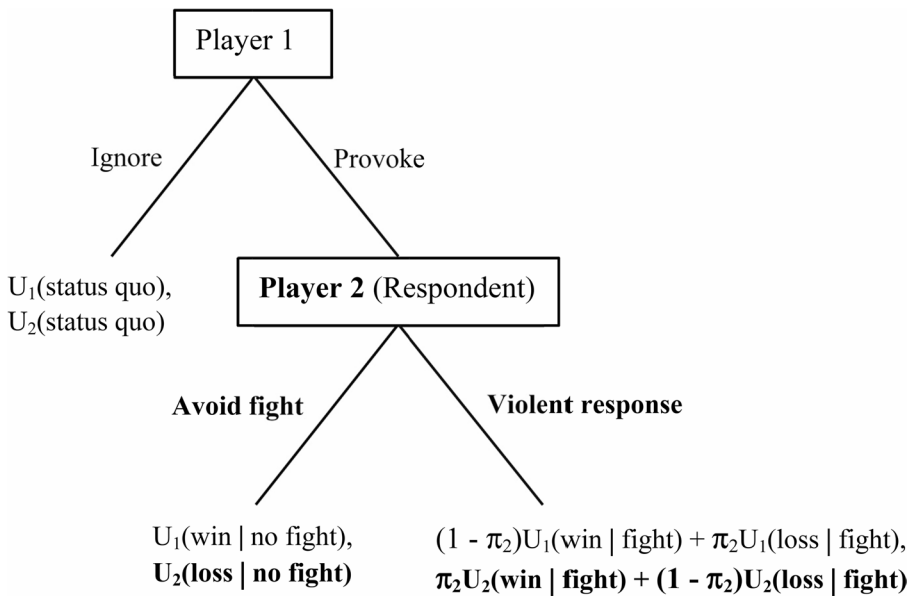


Fig. 1 A simple provocation game. *Note.* The relevant part for our analysis is in bold font

tive probability, π_2 , of winning and receiving the payoff of $U_2(\text{win} \mid \text{fight})$. However, there is also a probability of losing, $(1 - \pi_2)$, resulting in a payoff of $U_2(\text{loss} \mid \text{fight})$.

Player 2 will choose to fight if

$$\pi_2 U_2(\text{win} \mid \text{fight}) + (1 - \pi_2) U_2(\text{loss} \mid \text{fight}) > U_2(\text{loss} \mid \text{no fight}).$$

It follows that Player 2 is more likely to fight when:

- (1) Their subjective expectation of winning a physical confrontation (π_2) is higher.
- (2) The payoff of winning a fight ($U_2(\text{win} \mid \text{fight})$) is higher.
- (3) The payoff for losing a fight, $U_2(\text{loss} \mid \text{fight})$, is higher (since the partial derivative of Player 2's expected payoff for $U_2(\text{loss} \mid \text{fight})$ is $(1 - \pi_2)$ and therefore positive).
- (4) The payoff of avoiding a fight, i.e., backing down if provoked, ($U_2(\text{loss} \mid \text{no fight})$), is lower.

The derivation of testable hypotheses from this choice model necessitates linking the theoretical parameters to empirically measured variables (Kroneberg & Kalter, 2012; Lindenberg, 1992). In our case, these so-called bridge assumptions specify how respondents' street code beliefs, the strength of provocation, and the exposure to violence in their neighborhoods may affect these decision-theoretic parameters. We distinguish four constellations:

Constellation 1 When those who strongly believe in the code of the street face a strong provocation, the expected payoff of fighting will always be greater than the payoff of avoidance (irrespective of the neighborhood context).

Constellation 2 When those who hardly believe in the code of the street face only a weak provocation, the payoff of avoidance will always be greater than the payoff of fighting (irrespective of the neighborhood context).

In these situations, adolescents' cultural orientations provide clear guidelines on whether or not to use violence. If we adopt a psychologically more realistic, i.e., less abstract, view, adolescents may not even deliberate on this question (Beier, 2016): Strong believers in the code will spontaneously perceive a strong physical provocation as requiring a physical response. On the other end of the belief spectrum, those rejecting the code will not even consider reacting violently, even when mildly provoked. In dual-process theories, both reactions are considered instances of spontaneous behavior (Kroneberg et al., 2010; van Gelder & De Vries, 2013; Wikström, 2006; Wikström et al., 2012). Due to this match between actors' cultural orientations and situational demands, we expect the broader environment to play less of a role in their behavior. This is different when strongly street-oriented individuals get only mildly provoked, or when those who reject the code have to deal with a strong provocation.

Constellation 3 When those who strongly believe in the code of the street face a mild provocation, incentives are shaped by the environment in which the interaction is taking place: In a high-violence neighborhood, the expected payoff of fighting may be greater than the payoff of avoidance due to potential reputational gains. In a low-violence neighborhood, actors can expect informal sanctions for violence, which decrease the expected payoff of fighting relative to the payoff of avoidance.

Constellation 4 When those who hardly believe in the code of the street face a strong provocation, incentives are shaped by the environment in which the interaction is taking place: In a high-violence neighborhood, the expected payoff of fighting may be greater than the payoff of avoidance due to potential reputational loss when backing down. Contrary, in a low-violence neighborhood, there is less need to signal a readiness to defend oneself, and actors may also expect informal sanctions for violence. Hence, for those rejecting the code, the expected payoff of fighting will be lower than the payoff of avoidance in a low-violence neighborhood.

Hypotheses

Our analysis implies that the extent to which provocations of different strengths are perceived as requiring a violent response depends not only on adolescents' street code beliefs, but also on the environment in which the interaction is taking place. To prepare the ground for examining this interplay, we begin with more basic hypotheses about the average associations of these variables and respondents' willingness to use violence in response to a provocation:

Hypothesis 1 The stronger someone gets provoked, the more willing they are to respond violently.

Hypothesis 2 The stronger someone believes in the code of the street, the more willing they are to respond violently to a provocation.

We also expect a positive statistical interaction effect between these two variables. For those who believe in the code of the street, strong provocations carry a high risk of losing face, making it more difficult to avoid a fight. This argument yields the following hypothesis:

Hypothesis 3 The stronger someone believes in the code of the street, the stronger the positive effect of the strength of provocation on their willingness to respond violently.

Going beyond this interaction of individual and situational attributes, our theoretical model implies a three-way interaction between street code beliefs, the strength of provocation, and the exposure to violence in their neighborhoods. Based on our analysis in the previous section, we formulate the following hypotheses:

Hypothesis 4 Neighborhood violence increases the willingness to respond violently when those who do *not* believe in the code of the street face a strong provocation. In the case of a weak provocation, they are unwilling to respond violently irrespective of their neighborhood.

Hypothesis 5 Neighborhood violence increases the willingness to respond violently when those who strongly believe in the code of the street face a weak provocation. In the case of a strong provocation, they are willing to respond violently irrespective of their neighborhood.

Data and study context

We use survey data from a school-based prospective panel study that followed students in five neighboring cities in Germany over four years from 2013 until 2016. The cities are located in the Ruhr area, which is the largest urban agglomeration of cities in Germany. Historically shaped by coal and steel production, the Ruhr area has experienced a profound and long-lasting process of economic restructuring. This transition, marked by deindustrialization, job losses, and population decline, has transformed the region's urban fabric and contributed to persistent socioeconomic disparities (Hospers, 2004). The area is characterized by high levels of unemployment and ethnic diversity.²

These characteristics make this area particularly suited to study the role of street code beliefs for youth violence in Europe. At the same time, it should be kept in mind that the code is not associated with illegal businesses, fights for territories, or lethal violence in Germany (Heitmeyer et al., 2019). Compared to the United States, homi-

²Unemployment rates in the region were about two times the national average (e.g., in 2016, the municipality to which four of the five cities belong recorded an unemployment rate of 12%, compared to a national rate of 5.8%; Agentur für Arbeit Gelsenkirchen, 2016; Statistik der Bundesagentur für Arbeit, 2016). Disposable income per capita is also lower than the German mean, amounting to €15,574 in this municipality, and €19,145 in the second municipality, compared to the national average of €21,675 (Statistisches Bundesamt, 2016). At the same time, the share of residents with a migration background is higher in both municipalities (26–34%) than in Germany overall (22%; Statistisches Bundesamt, 2024).

cides are substantially less common in Germany: while the firearm homicide rate in the U.S. is 3.6 per 100,000 population, it is only 0.1 in Germany; likewise, the non-firearm homicide rate is 1.7 in the U.S. and 0.5 in Germany (Grinshteyn & Hemenway, 2016). Still, as emphasized by Anderson (1999, p. 84) himself, signaling an ability to fight to gain and retain respect is a generalizable core element of the code of the street.

The main objective of the study was to collect large-scale data on the determinants of delinquency from a choice-theoretic perspective. In the following analyses, we use data from wave 4 as it included a larger, more representative sample of schools and a randomized scenario tailored to our research question. In this wave, 46 out of 52 eligible schools participated (89% response rate), and 3809 out of 4320 students at the participating schools (88% response rate). Half of the sample was randomly assigned to a neighborhood-based scenario, which serves as the basis for our empirical analyses in this article. After listwise deletion of missing values, the final sample consists of 1394 cases. Participation in the survey was voluntary and required parental consent. To maximize privacy, interviews were collected as computer-administered self-interviews (Beier & Schulz, 2015). To counteract language and illiteracy problems, students could also listen to questions and answer options via headphones.

Due to its high response rates and theory-guided measures, the study provides rich survey data that allow scholars to examine mechanisms that underlie delinquency. However, the data contain limited information on respondents' residential contexts. We therefore linked contextual data based on geo-coded police records.

Measures

Neighborhood violence

To measure adolescents' exposure to violence in their residential environments, we linked their survey responses to spatial police-recorded data on local crime incidents. As detailed elsewhere (Kroneberg et al., 2022), we first generated random pseudo-addresses close to respondents' original home addresses (distances within 150 m) for reasons of data protection. We then defined ego-centric neighborhoods, or *egohoods* (Hipp & Boessen, 2013), by drawing circles around the geo-coordinates of these pseudo-addresses (Hartung & Hillmert, 2019).³ For our main analyses, we use egohoods based on a radius of 600 m around adolescents' pseudo-address, i.e., encircling areas of 1.13 km² (0.44 mi²). We measured the level of neighborhood violence as the incidence of police-recorded cases of simple assault, using data for the year 2016 in which our survey took place.⁴

³ While there are several ways to define spatial environments (Ratcliffe, 2004), administratively defined geographical units of analysis to measure neighborhoods will miss relevant parts of respondents' residential environments, particularly if their address is located close to the border of a unit (Gerrell, 2017; Hipp & Boessen, 2013).

⁴ In German law, simple assault refers to the intentional or negligent infliction of physical harm or damage to a person's health. This can include minor injuries like bruises or scratches and can be punished by a fine or up to five years in prison. The law also includes other forms of assault, such as dangerous or aggravated bodily injury, which carry harsher penalties.

Violent intentions and situational variables in the scenario

Our outcome and situational variables are based on a newly developed randomized scenario. The scenario draws upon previous criminological research on inter-personal violence (Benard et al., 2024; Benard & Doan, 2020; van Gelder et al., 2019; Wikström et al., 2012) and is an attempt to immerse respondents in a broader social context. We randomized whether a respondent shall imagine the scenario to take place in their neighborhood or in their school. In this article, we only use the neighborhood-based scenario because our measure of contextual exposure to violence is not suited to capture differences between schools.⁵ The scenario read as follows (with randomized treatments in brackets and italics):

“Here is a story. Try to imagine the following....

Please think about your neighborhood. Imagine what you see when you walk through your residential area. Think about the people you see there. Think about other teenagers, but also about the adults in this area.

Imagine leaving the house and walking a few streets. A boy approaches you on the sidewalk. As he passes by, he tells you [*“Go away!” and pushes you to the side OR pushes you so strongly that you fall on the ground*]. A group of teenagers stands close-by. They have seen what happened and [*tell the boy to leave you alone OR begin to laugh at you loudly*].”

We then asked respondents “Would you hit or kick the boy now?” and allowed them to answer on a five-point response scale (No, never: 0; No, rather not: 1; Maybe: 2; Yes, probably: 3; Yes, definitely: 4). Boys (girls) were matched with male (female) interaction partners in the scenario.

Violent intentions Although hypothetical scenarios tend to have lower external validity when it comes to actual behavior, our analytic interest is in the conditions that make adolescents signal their readiness to use violence in response to provocations. We acknowledge that this readiness might not always translate to violent behavior in real situations.

Strength of provocation We speak of a weak or mild provocation if the approaching peer tells the respondents [*“Go away!” and pushes you to the side*]. A strong provocation involves being pushed *so strongly that you fall on the ground* – a physically more violent provocation and a more humiliating experience that may be seen as demanding a more violent response.

⁵ For 10th grade students in Germany, school life mostly takes place within the buildings and schoolyards. The police-recorded incidence of violence in the surrounding neighborhood is therefore a poor indicator of students’ relevant school context. Moreover, police records cover times during which students are not exposed to this area, such as weekends and evenings during weekdays (when school gyms are often used by external organizations such as sport clubs). Examining the interplay of individual, situational, and school characteristics therefore requires a different set of contextual measures, such as the average attitudes of other students or the incidence of violence among students (Beier, 2016). Such an analysis is beyond the scope of this paper.

Reaction of bystanders Our scenario also randomly varied the behavior of the bystanding group of teenagers. Our initial measurement intention was to distinguish between a supportive-deescalating behavior of bystanders (*tell the boy to leave you alone*) that may reduce the perceived need for a violent response and a ridiculing reaction (*begin to laugh at you loudly*) that may increase the reputational stakes. However, upon closer inspection, the interpretation and behavioral implications of these treatments are less clear-cut. In particular, the ridiculing reaction of the bystanding teenagers could also indicate that the bystanders are friends with the offender, making a violent response more risky and less likely.

Street code beliefs

We used an adapted German translation of the well-known scale by Stewart and Simons (2010) to capture students' belief in the code of the street. Such beliefs may often correlate with students' internalization of street code values (a term used by Stewart & Simons, 2010). However, we speak of street code beliefs to stay closer to the actual wording of the items and response options:

1. When someone disrespects you, it is important that you use physical force or aggression to teach him or her not to disrespect you.
2. If someone uses violence against you, it is important that you use violence against him or her to get even.
3. People tend to respect a person who is tough and aggressive.
4. People will take advantage of you if you don't let them know how tough you are.
5. Sometimes you need to threaten people in order to get them to treat you fairly.
6. It is important to show others that you cannot be intimidated.
7. People respect a person who has the nerve to fight physically for his/her rights.⁶

Respondents could indicate how much they agree on a five-point scale (1=strongly disagree to 5=strongly agree). For each participant, the mean across all seven items was calculated. High values correspond to stronger street code beliefs. The alpha coefficient was 0.84 (which is similar to the original scale, see Taylor et al., 2010).

Analytic strategy

After providing descriptives, our analysis proceeds in three steps. First, we use non-parametric techniques to examine the bivariate relationship between the incidence of police-recorded violence in the neighborhood and respondents' violent intentions in the scenario. There are no strong theoretical or empirical grounds for specifying the precise level of neighborhood violence that makes adolescents most prone to violent

⁶ In the original scale by Stewart and Simons (2010), this seventh item was reversed: "People do not respect a person who is afraid to fight physically for his/her rights." Our minor adaption was motivated by cognitive pre-tests in which the literal German translation turned out to be too difficult to understand for some of our young respondents.

behavior. Moreover, it is unlikely that each additional case of police-recorded violence affects adolescents to the same extent—a key assumption of a linear relationship. To explore potential nonlinearity, we use bivariate, locally weighted regressions (i.e., Lowess scatterplot smoothing) to estimate which levels of neighborhood violence are associated with the strongest violent intentions in our sample. This exploratory step lays the groundwork for our hypotheses tests.

Second, we analyze our scenario by focusing on the impact of the randomized dimensions and their potential interaction with respondents' belief in the code of the street. For ease of interpretation, we estimate linear regression models (OLS) using the five-point response scale of the intention to use violence as the outcome variable. To ensure that any interaction effects are not artefacts of ceiling or floor effects, we also estimate Tobit models as a robustness check (Osgood et al., 2002). The results of the Tobit models are reported in Appendix A1.

In the third step, we bring these parts together and test our hypotheses on how respondents' reported willingness to use violence depends on their street code beliefs, the strength of provocation, and the exposure to violence in their neighborhoods. Analyzing a scenario that is situated in respondents' neighborhoods allows us to link these individual, situational, and contextual variables. However, statistically, it also leads to a potential concern: spatial autocorrelation. Recall that our outcome variable prompts respondents to consider their residential area and their hypothetical behavior in that setting. Thus, respondents residing in close proximity may have interpreted the scenario more similarly than respondents who live further apart. This will actually be more likely the more successful our scenario was in immersing respondents in their residential areas. Consequently, the distribution of observed values for our outcome variable may exhibit spatial autocorrelation. Such a spatial clustering of errors violates the independence assumption of ordinary least squares (OLS) regression, potentially leading to biased estimates and standard errors (Steenbeck & Ruiter, 2021). To test the robustness of our findings, we conducted geospatial-econometric tests and spatial regression models that account for spatial autocorrelation. Results are reported in Appendix A2.

Results

Descriptives

Table 1 gives descriptive information on our main variables of interest as well as on the socio-economic composition of the study area. On the five-point response scale, the average self-reported readiness to use violence in the scenario lies between “No, rather not (1)” and “maybe (2).” Fig. 2 shows how students' street code beliefs and the incidence of police-recorded violence are distributed in our sample. While the majority of students disagree with the statements that capture acceptance of the code of the street, the mean response of about 30% of students is partial or complete agreement. With regard to neighborhood violence, we also observe a right-skewed distribution. There are only a few egohoods where the incidence of police-recorded violence offences is greater than 50.

Table 1 Summary statistics

	Mean	SD	Min	Max
Violent intention	1.17	1.25	0	4
Street code beliefs	0.36	0.21	0	1
Neighborhood violence	0	1	-1.11	4.73
Provocation	0.49	0.5	0	1
Bystander reaction	0.51	0.5	0	1
Additional Demographics				
Female	0.51	0.5	0	1
Age	15.73	0.718	14	18
Egohood-level Variables				
Yearly purchasing power per household (in Euros)	37,220	6948	23,628	70,391
Percentage of immigrants	12.952	8.96	0.090	51.210
Percentage of homeowners	37.89	11.713	17.68	68.32

N=1394. Neighborhood violence was z-standardized. Egohood-level variables are based on data from the geomarketing institute microm

Neighborhood violence and violent intentions

Before we estimated regression models, we explored in a non-parametric fashion how respondents' self-reported readiness to use violence in the scenario relates to the level of violence in their neighborhoods.

Figure 3 suggests that the relationship between the incidence of police-recorded violent offences in the neighborhood and respondents' violent intentions is non-linear. By assuming a linear relationship (the straight line), one would mistakenly conclude that both variables are basically unrelated. In contrast, the Lowess curve (dashed line) shows that from an incidence of 0 up to an incidence of approx. 40 violent offences, greater exposure to violence in the neighborhood makes it more likely that respondents report violent intentions. Note that this variable range includes most of the neighborhoods in our sample. Beyond an incidence of approx. 40 violent offences, this relationship levels off and reverses, producing an inverse U-shaped overall relationship.

While we discuss potential causes of this shape in the final section, there is no need to adopt a particular substantive interpretation for our analytic purposes. Rather, we will focus on the left-hand side of the distribution of neighborhood violence that represents the vast majority of respondents in our sample. Specifically, we will compare adolescents who face above-average neighborhood violence (one standard deviation above the mean) with those being exposed to below-average neighborhood violence (one standard deviation below the mean). Across these groups of respondents, greater incidence of assault in the neighborhood is more criminogenic in the sense of being associated with greater violent intentions.

Randomized treatments and respondents' street values: A situational analysis

Leaving potential influences of the neighborhood aside for the moment, we first provide a purely situational analysis based on the randomized scenario. In Model 1 in Table 2, we regressed respondents' violent intentions on the two randomly varied

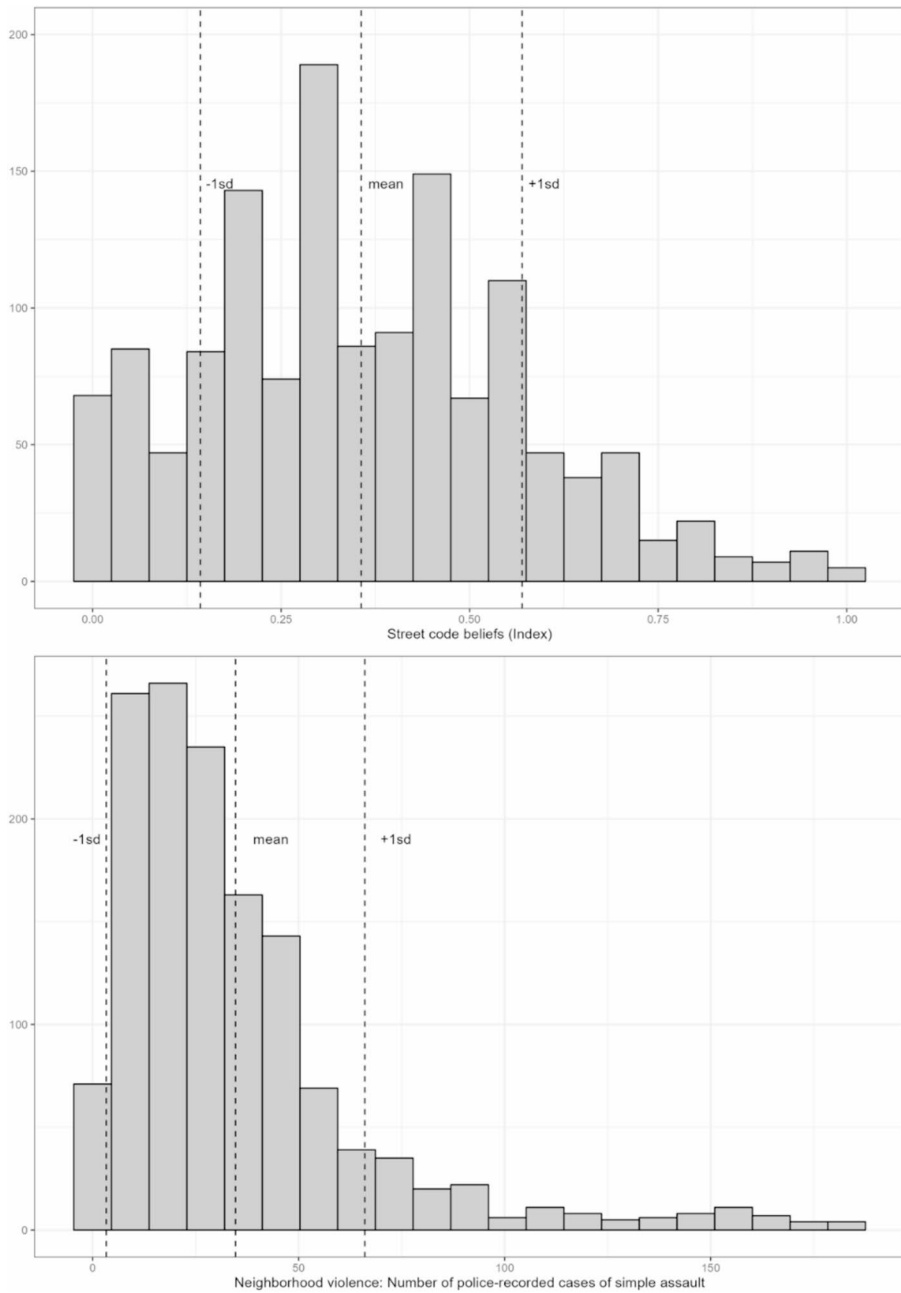


Fig. 2 Histogram of the incidence of simple assault in the egohoods around respondents' pseudo-addresses ("neighborhood violence") and distribution of street code beliefs

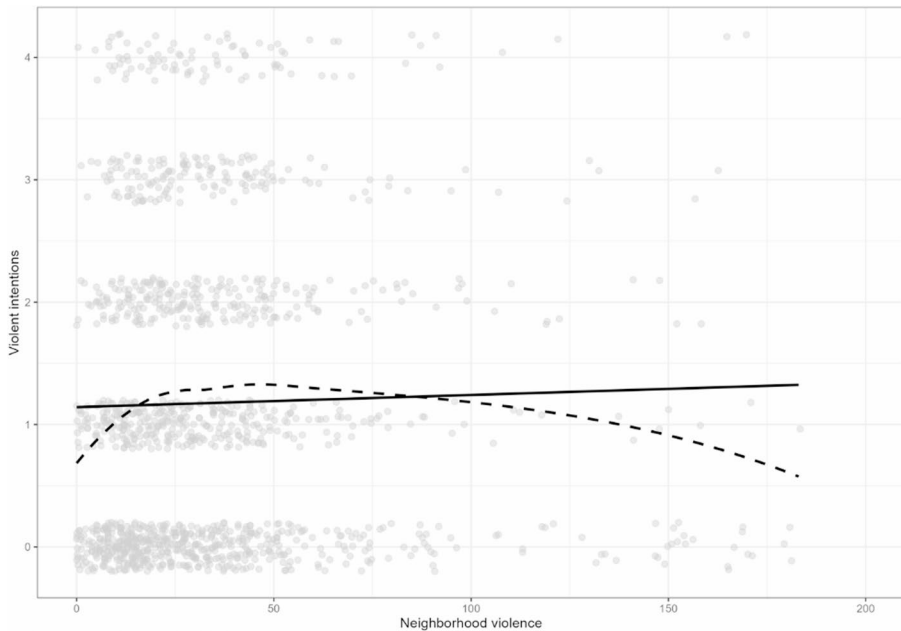


Fig. 3 The association between police-recorded neighborhood violence and violent intentions in the scenario. *Note.* Dots represent respondents' intentions in the scenario (data points are jittered) and egohood violence. The straight line shows the linear relationship. The dashed curve is based on locally weighted scatterplot smoothing (LOWESS)

Table 2 Linear regression models of violent intentions: vignette dimensions and students' street code beliefs

	Model 1	Model 2	Model 3	Model 4	Model 5
Provocation (1 = strong, 0 = weak)	0.711** (0.064)	0.619** (0.089)	0.638** (0.057)	0.359** (0.103)	0.635** (0.057)
Bystander reaction (1 = ridiculing, 0 = supporting)	0.191** (0.064)	0.103 (0.080)	0.175** (0.056)	0.170** (0.056)	0.009 (0.102)
Provocation x Bystander reaction		0.181 (0.129)			
Street code beliefs			2.762** (0.137)	2.378** (0.190)	2.520** (0.187)
Provocation x Street code beliefs				0.782** (0.274)	
Bystander reaction x Street code beliefs					0.466+ (0.272)
Constant	0.724** (0.048)	0.766** (0.052)	-0.216** (0.057)	-0.082 (0.069)	-0.130+ (0.070)

N = 1394; *b* coefficients; standard errors in parentheses
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

characteristics of the situation. In support of *Hypothesis 1*, students report to be more likely to respond violently when confronted with a stronger provocation.

For the sake of completeness, we also examine the effects of the second situational treatment, despite its more ambiguous implications. Not surprisingly, the behavior of the bystanding group of teenagers plays a much smaller role. Overall, a ridiculing reaction (“*begin to laugh at you loudly*”) somewhat increases the reported likelihood of a violent response compared to a supportive-deescalating behavior of bystanders (“*tell the boy to leave you alone*”). Model 2 tests for an interaction between the two treatments. The non-significant and small coefficient of the product term suggests that they operate largely independent of each other.

Model 3 adds students’ street code beliefs as a predictor. Confirming *Hypothesis 2*, we find that street code beliefs are strongly and positively associated with violent intentions. In line with *Hypothesis 3*, the results of Models 4 and 5 suggest that the strength of the provocation has an even greater impact among students with stronger internalization of the code of the street. In comparison, the ridiculing reaction of bystanders is only moderately stronger among these “street kids” and this effect heterogeneity is only marginally significant ($p < 0.10$). In our robustness check in which we used tobit models to replicate our analyses (see Table A1 in the appendix), both interactions do not reach statistical significance – pointing to the expected difficulty of statistically distinguishing effect heterogeneity from ceiling and floor effects.

Taken together, the stronger effect of the strength of provocation and its stronger interaction with students’ street code beliefs in the linear regression models confirm that this variable is the more relevant indicator of respondents’ perceived need for a violent response. We therefore restrict the subsequent final step of our analysis to the strength of provocation and examine how it interacts with both respondents’ street code beliefs and their exposure to violence in their neighborhoods.

The interplay of situational influences and the neighborhood context

To test Hypotheses 4 and 5, we examine how respondents’ reported willingness to use violence depends on their street code beliefs, the strength of provocation, and the exposure to violence in their neighborhoods. Table 3 presents a series of models in which we increased complexity in a stepwise fashion. Models 6 to 8 serve to make transparent how the constitutive terms of the higher-order interaction relate to the outcome variable. Model 9 and Fig. 4 then provide the basis for evaluating the three-way interaction effect. All models in Table 3 include those predictors that proved relevant in the previous regression models. Since Fig. 3 suggested a quadratic relationship, all models include neighborhood violence both as a linear and as a quadratic term. Finally, we z-standardized the neighborhood violence measure so that the conditional effects (estimated by the coefficients of the lower-order terms) refer to the center of its distribution.

Model 6 confirms the inverse U-shaped relationship parametrically. Additional tests (available upon request) showed that a polynomial of higher order is not necessary. The quadratic specification therefore provides the basis for our subsequent estimation of interaction effects between neighborhood violence, situational provocation, and respondents’ street code beliefs.

Table 3 Linear regression models of violent intentions: the interplay of students' street code beliefs, and situational provocation, and neighborhood violence

	Model 6	Model 7	Model 8	Model 9
Provocation (1 = strong, 0 = weak)	0.706** (0.064)	0.635** (0.056)	0.636** (0.056)	0.466** (0.114)
Bystander reaction (1 = ridiculing, 0 = supporting)	0.188** (0.064)	0.173** (0.056)	0.173** (0.056)	0.165** (0.056)
Neighborhood violence	0.197** (0.051)	0.162** (0.044)	0.016 (0.077)	-0.057 (0.092)
(Neighborhood violence) ²	-0.077** (0.018)	-0.058** (0.016)	-0.005 (0.027)	0.048 (0.031)
Street code beliefs		2.738** (0.137)	2.897** (0.152)	2.700** (0.205)
Street code beliefs x Neighborhood violence			0.422 ⁺ (0.222)	0.601* (0.296)
Street code beliefs x (Neighborhood violence) ²			-0.160 ⁺ (0.092)	-0.377** (0.113)
Provocation x Street code beliefs				0.444 (0.300)
Provocation x Neigh- borhood violence				0.139 (0.156)
Provocation x Street code beliefs x Neigh- borhood violence				-0.327 (0.453)
Provocation x (Neighborhood violence) ²				-0.112* (0.049)
Provocation x Street code beliefs x (Neighborhood violence) ²				0.374* (0.159)
Constant	0.805** (0.053)	-0.147* (0.062)	-0.203** (0.062)	-0.120 ⁺ (0.071)

N = 1394; b coefficients; standard errors in parentheses. Neighborhood violence was z-standardized
⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

Model 7 adds street code beliefs as a predictor, which again shows a strong association with reported violent intentions in the scenario. While the coefficients of neighborhood violence decrease slightly compared to Model 6 (which may partly exert its influence on violent intentions through higher street code acceptance), the reduction is very small.

In Model 8, we examine the interaction of students' street code beliefs and the level of violence in their neighborhoods. For this purpose, we add product terms that capture how the influence of neighborhood violence (both the linear and the squared term) varies depending on street code beliefs. The coefficients of both product terms are in the same direction as their neighborhood component terms. This suggests that the association between neighborhood violence and violent intentions is somewhat more pronounced for respondents with strong street code beliefs: The inverse U-shaped relationship is characterized by a sharper increase in violent intentions as the incidence of neighborhood violence increases, but also by a stronger downward slope once the turning point is reached. However, this difference should not be over-

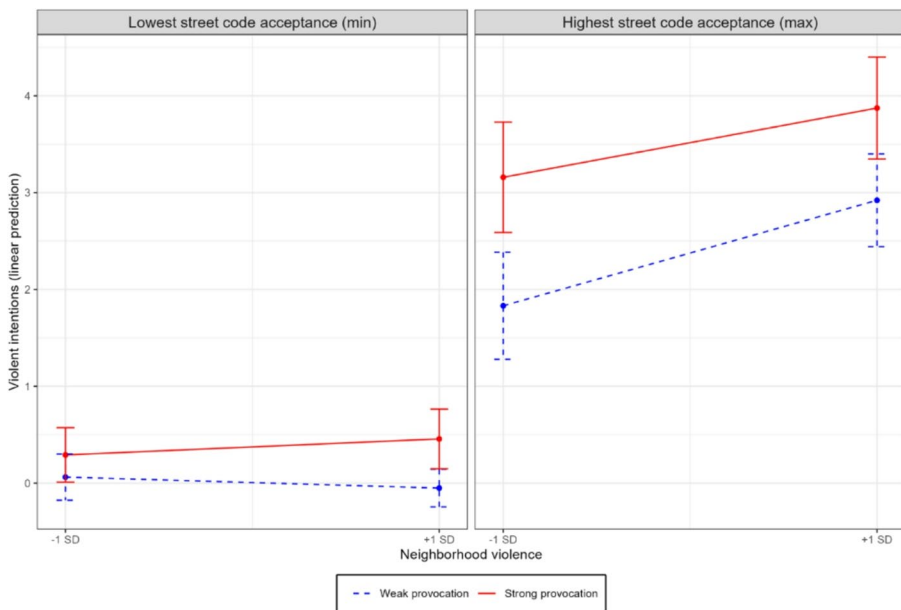


Fig. 4 The association of below- and above-average neighborhood violence with violent intentions conditional on the strength of provocation and students' street code beliefs. *Note.* Predictive margins with 95% confidence intervals

interpreted as the coefficients of the product terms are only marginally significant ($p < 0.10$). Moreover, in contrast to the robust findings for Model 6 and 7, this interaction effect turns insignificant in the tobit models (see Table A2 in the appendix).

Model 9 is our final model that estimates the three-way interaction of students' street code beliefs, the strength of provocation, and the exposure to violence in their neighborhoods. The highest-order term is statistically significant, suggesting that these individual, situational and environmental predictors interact in influencing students' self-reported violent intentions. This is also true in the tobit model (see Table A2 in the appendix) which yields coefficients of the same signs and very similar statistical significance also for the lower-order terms.

To ease interpretation, Fig. 4 illustrates this three-way interaction by depicting conditional effects. Each of the two panels of the figure depicts the association between neighborhood violence (x-axis) and violent intentions (y-axis) for the two levels of provocation strength. The left-hand side panel is for students with the weakest street code beliefs, the right-hand side panel for those with the strongest street code acceptance. First, we see that the different beliefs of these two extreme groups of respondents get mirrored in different levels of violent intentions, which are markedly higher among the "street kids". Second, we see that, overall, the stronger provocation (red solid line) is associated with a greater reported likelihood of violent response than the weaker provocation (blue dashed line).

Third, and most importantly, the different slopes of the four lines in Fig. 4 indicate the presence of a statistical interaction: the association between neighborhood violence and violent intentions varies across combinations of students' street code beliefs and the strength of provocation. Among students who disagree with the code of the

street (the left-hand side panel), different levels of neighborhood violence are not significantly associated with violent intentions ($p=0.536$ for the weak provocation; $p=0.511$ for the strong provocation). Hence, *Hypothesis 4* is only partly confirmed. While neighborhood violence was expected to be irrelevant in case of a weak provocation (second part of *Hypothesis 4*), it seems to be generally irrelevant among students who disagree with the code of the street, even when facing a strong provocation.

Turning to the right-hand side panel, the substantial violent intentions among students who strongly embrace the code of the street and face a strong provocation (red solid line) seem to be somewhat greater for the higher level of neighborhood violence (which would contradict the second part of *Hypothesis 5*). However, this mean difference does not reach conventional levels of statistical significance ($p=0.146$). When these students face a weaker provocation, the higher level of neighborhood violence comes with significantly higher violent intentions ($p<0.05$).⁷ This is in line with *Hypothesis 5*.

Another way to look at Fig. 4 is to compare estimates vertically and ask under what conditions the strength of provocation increases violent intentions. Statistical tests indicate that provocation strength increases violent intentions ($p<0.01$) in all but one case: Students who strongly disagree with the code of the street and live in low-violence neighborhood report no violent intentions, irrespective of provocation strength ($p=0.263$).

We report the results of several robustness checks in appendices. Appendix A1 shows that Tobit models reveal substantively identical patterns (see Figure A1). The same is true when using clustered standard errors at the level of schools (Appendix A3). Finally, the interaction effect is also robust when taking into account the spatial autocorrelation that may result from our neighborhood-based scenario (Appendix A2).

Discussion and conclusion

When do adolescents feel the need to respond violently to provocations, and what is the role of the broader social context therein? Elijah Anderson's (1999) ethnographic work on the "Code of the Street" described how individuals use violence to defend and gain respect in violent neighborhoods. Several studies aimed to provide large-scale quantitative evidence for key tenets of Anderson's theory (Beier, 2016; Berg et al., 2012; Brezina et al., 2004; Ernst & Lenkewitz, 2020; Markowitz & Felson, 1998; Moule & Fox, 2020; Stewart et al., 2002; Stewart & Simons, 2010). However, a major challenge has been to capture the interplay of individual, situational, and contextual influences.

Our study makes several contributions to this line of scholarship. First, based on a large-scale school survey of 10th graders in five German cities, our study underscores

⁷ The statistical tests for these four slopes show the same result when we do not compare those with the weakest and strongest street code acceptance but focus on students who hold street code beliefs one standard deviation below and above the mean.

the fruitfulness of the broader notion of the “code of the street” for understanding youth violence in a European context (Beier, 2016; Ernst & Lenkewitz, 2020; Keith & Griffiths, 2014; McNeeley & Hoebe, 2017; Schmollmüller et al., 2025). While the code is not associated with illegal businesses, fights for territories, or lethal violence in Germany (Heitmeyer et al., 2019), signaling an ability to fight to gain and retain respect is a generalizable core element of the code of the street. Second, we provided Anderson’s theory with more explicit choice-theoretic micro-foundations. To this end, we used a simple game-theoretic model of provocation and response (Szekely & Gambetta, 2020). This model allowed us to reconstruct main arguments from Anderson’s theory and thereby proved heuristically useful to connect his work on the code of the street with rational choice approaches to violence. Third, we devised a new way to examine the interplay of environmental, situational, and individual characteristics. We linked these levels by placing a randomized scenario in respondents’ neighborhoods, asking them to immerse themselves in their neighborhoods in which the fictitious provocation is taking place. Importantly, the scenario avoids the problem that actors self-select into more or less criminogenic situations (Bernasco et al., 2013; Weerman, 2015; Osgood, 2023).

While our study adds to the toolbox of linking levels of analysis (Messner, 2012; Thomas et al., 2022), we also pointed out methodological challenges of placing scenarios in social contexts. A first challenge comes with our use of geo-coded police data to measure respondents’ exposure to violence in their neighborhoods. While this strategy to enrich survey data with contextual information is widely applicable, the limitations of police data leave some room for interpretation. In an exploratory step, we found that police-recorded neighborhood violence was positively associated with violent intentions in the scenario up to an incidence of approx. 40 cases of simple assault in respondents’ egohood. Beyond this point, this relationship leveled off and reversed, producing an inverse U-shaped overall relationship. The downward slope for neighborhoods with the highest number of police-recorded violent offences may be due to several potential causes. First, it may reflect sampling variation given the paucity of observations with very high numbers of police-recorded violent offences in their neighborhood. Second, police-recorded violent offences are only a proxy for the actual number of violent offences to which adolescent residents are exposed. One possible source of measurement error is monitoring bias. Police departments may prioritize particular areas, leading to unequal police control practices that may bias crime statistics (Buil-Gil et al., 2021). In particular, if some neighborhoods were monitored more intensely by the police, our measure would overestimate the criminogeneity of these settings relative to other neighborhoods where a greater number of violent offences remains unreported and does not enter the crime statistic. Third, intense formal control may alternatively lead to a higher perceived risk of getting caught among adolescent respondents, making them less likely to imagine a violent response in their neighborhoods. Finally, it may also be the case that respondents in high-violence neighborhoods tend to think of more brutal, determined, or skillful opponents when imagining to be provoked in their neighborhood – and therefore report lower violent intentions due to a greater expected risk of injury when entering a fight.

Notably, these latter two interpretations presume that our scenario was successful in immersing students in their individual neighborhoods in which the fictitious

provocation was taking place. Future studies may examine this assumption and turn to more advanced techniques to immerse respondents in their neighborhood, for example, by using the possibilities afforded by virtual reality technology (Nee et al., 2019; van Gelder et al., 2019).

A second, statistical challenge of our approach is that of spatial autocorrelation, which will arguably be greater the more successful a written scenario immerses respondents in their individual neighborhoods. Respondents from high-violence neighborhoods may interpret the same scenario (e.g., someone strongly provoking them) differently than respondents from low-violence neighborhoods (cf. Dafoe et al., 2018). As a consequence, the distribution of observed values on our outcome variable might be spatially correlated. To test the robustness of our findings, we conducted geospatial-econometric tests and spatial regression models that take into account spatial autocorrelation. Reassuringly, our main results also hold in these robustness analyses (see Appendix A2).

Beyond these methodological lessons, our analyses revealed an interplay of environmental, situational, and individual characteristics that resonates well with Anderson's theory. As expected, a stronger provocation and a stronger acceptance of the code of the street were both associated with higher violent intentions (*Hypotheses 1* and *2*). Moreover, the strength of provocation had a stronger influence among students with strong street code beliefs (*Hypothesis 3*). We also found support for the view that the role of neighborhood depends on students' street code beliefs and the strength of provocation. Among students who did not believe in the code of the street, a higher level of violence in their neighborhoods was not associated with more violent intentions. This was expected in the case of a weak provocation (see the first part of *Hypothesis 4*), but also true in the scenario of a strong provocation (in contrast to the second part of *Hypothesis 4*). However, neighborhood violence did play a role among students with strong street code beliefs. When facing a weaker provocation, those students reported significantly higher violent intentions when they lived in a neighborhood with above-average level of violence rather than in a low-violence neighborhood (in line with *Hypothesis 5*).

Results of previous studies can help to make sense of the deviating finding that those who rejected the code were unresponsive to the level of neighborhood violence also in the strong provocation scenario. Ernst and Lenkewitz (2020) found that the extent to which violence is associated with elevated status in German secondary schools only matters for physical aggression among students with stronger street code beliefs. At the same time, our scenario-based analysis does not allow us to rule out that even students who hold no street code beliefs may, at times, feel pressured to use violence defensively when strongly provoked (Beier, 2016). Such pressures may not be evoked by a written scenario but still become relevant for actual behavior in real-life settings.

Regarding students with strong street code beliefs, we also acknowledge that their reported readiness to use violence when provoked might not always translate into violent behavior in real situations. However, our analytic interest was precisely in the conditions that make adolescents signal their readiness to use violence in response to provocations. This instrumental value of violence as a signaling device or a means to gain respect is at the heart of Anderson's theory.

Based on our choice-theoretic re-construction of Anderson's arguments, our findings suggest that students with strong street code beliefs are more ready to use violence – even in response to a relatively weaker provocation – in neighborhoods where such behavior may be rewarded and where avoiding a fight may imply reputational losses. While provocations always pose a threat or opportunity for these individuals, there is less need to signal a readiness to defend oneself in low-violence neighborhoods, where violence is also more likely to be informally sanctioned.

In comparison to other studies who theorized the role of broader social environments based on rational choice theory (Matsueda et al., 2006; Thomas et al., 2022), we did not use direct measures of perceived costs and benefits. Rather, we followed a so-called indirect test strategy (Kroneberg & Kalter, 2012) by introducing assumptions that relate respondents' street code beliefs, the strength of provocation in a hypothetical scenario, and the level of neighborhood violence to the relevant set of incentives. Accordingly, it needs to be stressed that these associations can also be interpreted through different theories of action. In particular, previous work to provide Anderson's theory with action-theoretic microfoundations has turned to dual-process theories (Beier, 2016; Ernst & Lenkewitz, 2020). These theories emphasize that some situations trigger spontaneous behavior that may lead actors to disregard instrumental incentives, such as weighing potential status gains against the expected risks of a fight (Kroneberg et al., 2010; van Gelder & De Vries, 2013; Wikström, 2006; Wikström et al., 2012). This is one way to interpret our findings that neighborhood violence is not relevant among “decent kids,” as well as less relevant among “street kids” who face a strong provocation. More direct evidence for such spontaneous decisions comes from Beier (2016) who used response latencies to show that students also respond faster to a scenario when their street code beliefs are in line with the demands of the situation.

Our study provides a starting point for a choice-theoretic analysis of the code of the street. The limitations of our study suggest several extensions for future research. Going beyond our cross-sectional analysis, longitudinal studies are important to examine how different contexts are more or less conducive to the development of street code beliefs during adolescence. For example, a recent study by Erickson and colleagues (2025) showed that particular forms of school victimization were significantly associated with increased street code adherence. Another direction is to extend our measures of contextual and situational characteristics. While we used police-recorded crimes as a measure of neighborhood violence, community surveys would allow to capture also the prevalence of street-code beliefs among the adult population in a neighborhood. At the situational level, multiple different scenarios could be developed that proxy different levels of provocation or tap into the deterrence of future victimization and the desire to establish and maintain respect as different considerations that are relevant in street code beliefs. In terms of research design, the most ambitious step would be to study not only the choice of one individual but the interaction between two (or more) players (i.e., covering also the decision to challenge someone). This would also allow one to use the full analytic power of game-theoretic models. One empirical strategy would be to pair adolescents from the same neighborhood as well as different neighborhoods of known characteristics in lab-in-the-field experiments. In any case, we believe that more explicit choice-theoretic foundations will provide a basis to systematize theoretical and empirical work on how social contexts affect crime and delinquency.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11186-025-09672-w>.

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Author contributions The first two authors contributed to the study conception, design, and data collection. Material preparation and analysis were performed by Clemens Kroneberg, André Ernst, and Christof Nägel. Clemens Kroneberg developed the theoretical model and wrote the first draft of the manuscript. All authors commented on previous versions of the manuscript and read and approved the final manuscript.

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Data availability Replication data⁸ and code are available at https://osf.io/preprints/osf/nydze_v1

Declarations

Ethical approval All procedures complied with the guidelines of the German Research Foundation (DFG) and were approved by the Mannheim Centre for European Social Research (MZES) and the data protection officer of the University of Mannheim.¹ The linkage of survey data with police crime statistics was approved by the data protection officer of the University of Cologne. In the context of replication study, a largely identical questionnaire and procedure was submitted to an institutional review board at the University of Cologne in 2024 and received a positive decision.

Consent to participate Informed consent was obtained from all individual participants of the study. As participants were under the age of 18, parental consent was also obtained.

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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⁸This is exclusive of police records of crime as data protection schemes prohibit open publication.

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