



Master's thesis

***The Impact of Contextual Changes on
 Hate Crimes Across Different Targeted
 Minority Groups***

*A Study of Adolescent Hate Crime in Counties of
 Lower Saxony, Germany*

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Are there deviations of the Master's thesis from the proposed plan?

No

Yes, please explain below the deviations

The research was conducted at the county level instead of the neighborhood level due to lack of availability at that level. Rather than examining the differences in hate crimes at the neighborhood level, the study focused on analyzing hate crime patterns and trends within counties. The decision to use county-level data was primarily driven by the data sources accessible for the research.

A thesis is an aptitude test for students. The approval of the thesis is proof that the student has sufficient research and reporting skills to graduate but does not guarantee the quality of the research and the results of the research as such, and the thesis is therefore not necessarily suitable to be used as an academic source to refer to. If you would like to know more about the research discussed in this thesis and any publications based on it, to which you could refer, please contact the supervisor mentioned.

Abstract

An extensive body of research has documented the relationship between hate crimes and economic deprivation and immigration. Much of this research focuses on how static levels of these structural conditions affect one type of hate crime. This study builds upon this body of research to demonstrate how changes in these structural conditions affect distinct minority groups based on the socioeconomic and symbolic threats they pose to the majority group. Using survey data collected in a representative survey (N = 12,380) among adolescents in Lower Saxony in 2019, and by merging it with official statistics on economic inequality and immigration across counties from 2015 to 2019, the study investigated self-reported hate crimes. Results provided support for the classification of minority groups based on the threats they pose into competing, dissident, and deviant groups. However, the study found that the relationship between hate crimes and changes in economic inequality and immigration was negligible. Results further indicated that individual factors such as feelings of individual or collective relative deprivation did not moderate these relationships but may explain hate crimes.

Rise in Hate Crimes

According to the Office for Democratic Institutions and Human Rights, there has been a recent increase in hate crimes in Germany (OSCE, n.d.). The recorded number of hate crime incidents, which stood at 3,046 in 2015, has more than tripled, reaching a total of 10,501 incidents in 2021. It is important to acknowledge that hate crimes are not isolated incidents and that factors driving these crimes often vary depending on the targeted groups (Glaser et al., 2002). Specifically, variations in hate crimes may stem from the perception that different minority groups pose distinct challenges to economic and symbolic interests (Meuleman et al., 2019).

Perceived challenges to economic interests emerge from individuals' subjective experience of competing for resources, such as employment opportunities or welfare benefits (Olzak, 1994). The perception of economic threats can be activated and deepened when there is a rise in economic inequality, as resources are perceived to become more scarce (Scheuerman et al., 2020). On the other hand, threats to symbolic interests stem from intergroup conflicts related to cultural traditions and shared values (Stephan & Stephan, 2013). Symbolic threats can be triggered when the proportion of a minority group, perceived as outsiders who do not assimilate the majority culture and its predominant values, increases within a specific

geographical area (Benier et al., 2016). Indeed, coinciding with the increasing trend of hate crimes, income inequality has steadily risen in Germany since the early 2000s, resulting in a widening gap between the impoverished and the affluent (BMAS, 2020). Moreover, in 2015, Germany experienced a substantial influx of approximately 1.1 million refugees, mostly people fleeing the war in Syria (BAMF, 2016).

Numerous empirical studies have in fact examined the relationship between hate crimes and the two macro-level conditions, economic inequality and immigration (Green et al., 2001). However, the findings from these studies have yielded mixed results regarding the relationship between hate crimes and economic inequality. Some studies indicated a positive relationship (Pratt & Cullen, 2005), while others showed negative (Kaylen & Pridemore, 2013) or no significant associations at all (Green et al., 2001; Pridemore, 2011). On the other hand, research has mostly found a positive relationship between hate crimes and immigration (Pratt & Cullen, 2005). Nevertheless, there is still a need to delve deeper into the examination of these relationships by considering the change in these factors, rather than solely focusing on their static levels. This is because individuals often perceive the current levels of inequality and immigration as the standard, making them more influenced by any alterations (Iwama, 2018). Moreover, such measures provide a more comprehensive understanding of causality. Furthermore, while existing research has contributed to our understanding of the factors influencing hate crimes targeting particular groups, there has been limited research on the distinct effects of these macro-level conditions on different victim groups within the same study, using the same sample of offenders. Given the tendency to generalize findings from one victim group to others, addressing this issue is important to prevent overgeneralization and ensure an accurate understanding of the varied impacts of macro-level conditions on different minority groups.

Addressing this gap, the present study aims to expand our understanding of the relationship between hate crimes, economic inequality, and immigration. Based on the differentiated threat approach, it investigates the classification of minorities into distinct groups based on the perceived socioeconomic or symbolic threats they pose (Meuleman et al., 2019). Then, the study examines the relationship between changes in economic inequality and hate crimes targeting minority groups perceived as socioeconomic threats (e.g., homeless), as well as changes in immigration and hate crimes targeting minority groups perceived as symbolic threats (e.g., Muslims). The extent of the varying impacts of these factors on different groups is also investigated.

Using the Lower Saxony School Survey of 2019, which allows studying crimes committed by adolescents as well as differences between counties within Lower Saxony, Germany, this study set out to answer the following research question: *Do hate crimes committed by adolescents differ based on minority groups being perceived as challenging economic or symbolic interests? If so, are these hate crimes differentially affected by changes in economic inequality and immigration within counties?*

Hate Crimes and Perceived Threats

The term hate crime refers to acts of violence, ranging from name-calling to physical assault, specifically targeting individuals based on their actual or perceived characteristics such as race, ethnicity, sexual orientation, gender identity, disability, religion, or homelessness (Green et al., 2001; Hall, 2018; Levin, 1999). Hate crimes occur when the perpetrator is partially or entirely driven by prejudice against a certain outgroup to which the victim is perceived to belong to. Thus, the perpetrator's motivation is a key factor in distinguishing hate crimes from other types of crimes (Benier et al., 2016; Green et al., 2001). In the case of Germany, an incident is only legally deemed a hate crime if either hate or bias is identified as the primary motive for the offence (Garland & Funnell, 2016).

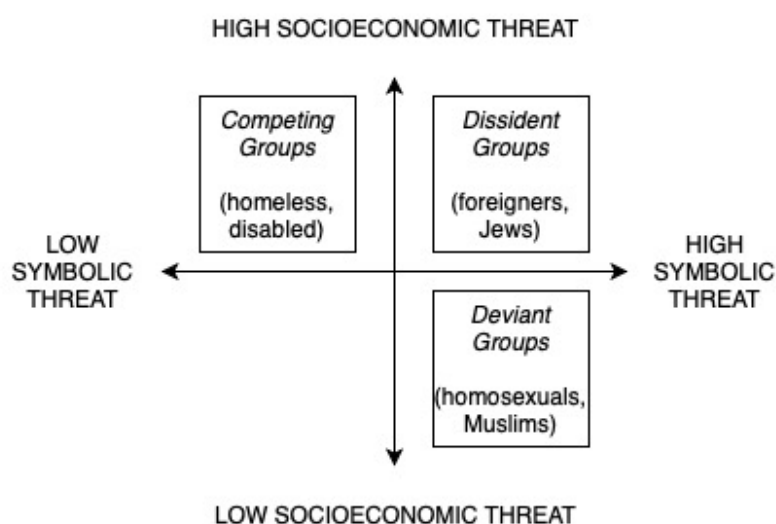
Bias can emerge when an individual perceives a threat to their interest, identity, or power status (Hall, 2013, p. 89; Riek et al., 2006). These threats are related to economic opportunities, access to resources, social stability, or values and norms, and can be categorized into two types: socioeconomic threats and symbolic threats (Meuleman et al., 2019). Socioeconomic threats, also referred to as realistic threats, emerge from the subjective experience of relative deprivation and the competition for resources such as well-paid employment, affordable housing, or welfare state provisions (Olzak, 1994). Hate crime offenders driven by this type of threat feel a need to protect their resources (McDevitt et al., 2002). Symbolic threats, or cultural threats, originate from intergroup conflicts concerning the established social order, cultural traditions, and shared beliefs, norms, and values (Stephan et al., 1998; Stephan & Stephan, 2013). In this case, offenders are driven by a desire to avenge a perceived degradation or assault on their group (McDevitt et al., 2002). Moreover, this bias may still occur even in the absence of a direct threat to oneself (Bobo, 1983). Specifically, these threats can be perceived by individuals as a threat to their ingroup by outgroups. That is, when the interests of a group as a whole are threatened, members may perceive this as a threat, even though self-interest is not directly impacted (Hall, 2013, p.89).

Differentiated Threat Approach

Meuleman et al. (2019) propose categorizing minorities into distinct groups based on the perceived threat they pose. Minority groups can be perceived as posing either a socioeconomic threat, a symbolic threat, or both simultaneously (Hjerm & Nagayoshi, 2011). It is crucial to categorize these groups because individuals who are similar in terms of the perceived threat they present may be subjected to similar targeting (Meuleman et al., 2019). The proposed categories are namely competing, dissident or deviant groups (Figure 1).

Figure 1

Typology of Minority Groups According to the Perceived Threat Posed



Note. Figure adapted from Meuleman et al. (2019)

Minorities perceived as competing groups are perceived as posing a high socioeconomic threat because they challenge the distribution of collective resources, such as unemployed and homeless people (Meuleman et al., 2019). Specifically, due to their low status and power within society, they are perceived as actively competing for scarce welfare resources or as being a burden on the economy (Glaser et al., 2002; Meuleman et al., 2019). However, these groups are perceived as posing a low symbolic threat as they do not challenge cultural norms. Arguably, disabled people, while adhering to the same cultural norms as the majority group, can be perceived as an economic burden. This perception may arise when public funds are allocated towards enhancing accessibility or when employment quotas specifically targeting disabled people are put in place, potentially being perceived as a challenge for

employment (Fiske et al., 2002). Hence, disabled people could be considered a competing group.

The perception of dissident groups entails a dual threat, encompassing both a high socioeconomic threat and a high symbolic threat. These groups are perceived as not only competing for limited resources but also challenging the values and norms held by the majority group (Meuleman et al., 2019). Foreigners, or immigrants, serve as an example of a minority group often perceived as a dissident group. They frequently occupy disadvantaged socioeconomic positions, and during periods of economic hardship, political leaders often use them as scapegoats, which can lead people from the majority group to perceive them as job competition and a threat to social welfare provision (Glaser et al., 2002). Furthermore, foreigners are perceived as a threat to the dominant culture and its values (Meuleman et al., 2019).

In Germany, the terms foreigner and immigrant are commonly associated with Turkish guest workers and refugees (Ehrkamp, 2006). Turkish people often occupy disadvantaged socioeconomic positions and are frequently perceived as a threat to low-skilled jobs and social welfare provisions. Additionally, the visibility of Turkish communal places raises concerns regarding the impact on so-called German culture, with some perceiving foreigners as unable to assimilate. Moreover, while the majority of Germany's population accepts political and war refugees, there are concerns about the financial burden on taxpayers, contributing to the perception of these groups as socioeconomic threats (Meidert & Rapp, 2019; Von Hermanni & Neumann, 2019). Furthermore, the events of New Year's Eve 2015 in Cologne, where numerous instances of sexual abuses against women were perpetrated by men, primarily identified as refugees, further intensified symbolic fears that refugees may constrain so-called Western values, including gender rights.

In contrast to foreigners, often blamed for making insufficient contributions to the economy, Jews are usually reproached for deliberately seeking to control both domestic and global economies (Fiske et al., 2002; Meuleman et al., 2019). Additionally, Jewish individuals are often seen as identifying primarily with their religious community rather than with their country of citizenship (Schiffer & Wagner, 2011). This perception positions Jews as a cultural other, who fails to assimilate to the majority group for generations. Simultaneously, they are believed to exert significant influence over the economy and compete with domestic actors. Hence, triggering both socioeconomic and symbolic threats for the majority group. Despite Germany's contemporary strong societal norms against anti-Semitism compared to discrimination against other groups, anti-Semitic attitudes persist, with nearly 10% of Germans

agreeing with statements such as that Jews have excessive influence on politics and the economy.

Lastly, deviant groups are perceived as posing a low socioeconomic threat but a high symbolic threat (Meuleman et al., 2019). Deviant groups, such as queer and Muslim people, are perceived as transgressing social norms and disrupting the cultural order, but not necessarily competing for economic resources. Queer individuals are perceived as challenging traditional values and conventional gender roles. Over the past few decades, attitudes towards queer people have improved in Germany, with 95% of citizens supporting anti-discrimination laws (FADA, 2017). However, traditional homophobia, characterized by attitudes viewing homosexuality as unnatural, persists at a level of 12% of the German population. Moreover, modern homophobia, characterized by attitudes rejecting public displays of homosexuality or discussions of queer issues in the media, reaches as high as 44%.

Within Western Europe, a notable hostility towards Muslims exists, largely rooted in an alleged incompatibility between European and Islamic values (Schiffer & Wagner, 2011). Islam is often portrayed as a religion inherently characterized by violence and gender inequality. Its followers are considered the ultimate cultural other who do not embrace democratic and liberal Western values. Thus, threatening values such as separation of church and state, individual rights, freedom, democracy, and tolerance. In Germany, around two-thirds of people of Turkish and Syrian descent identify as Muslims (Ehrkamp, 2006). Muslims are often perceived as foreigners, however, foreigners and Muslims are conceptually distinct groups (Lauwers, 2019). Anti-foreigner bias assumes that identity and the negative characteristics associated with foreigners are innate and unchangeable. In contrast, anti-Muslim bias sees religion as an individual choice, allowing for the possibility of conversion or assimilation into the majority group. That is, foreigners are perceived as a symbolic threat due to their origins, whereas Muslims are perceived as a symbolic threat due to their religious choice.

Previous research has pointed to a categorization of prejudice against foreigners, Jewish, homosexual, and Muslim people based on whether they are perceived as dissident or deviant groups (Meuleman et al., 2019). However, further research is necessary to explore the classification of homeless and disabled people. Therefore, building upon Meuleman et al. (2019), it is hypothesized that hate crimes targeting homeless and disabled people will be associated due to perceiving them as competing groups, hate crimes targeting foreign and Jewish people will be associated due to perceiving them as dissident groups, and hate crimes

targeting homosexuals and Muslim people will be associated due to perceiving them as deviant groups (H1).

Hypothesis 1: *Offenders target different minority groups depending on whether they are perceived as a competing, dissident or deviant group*

Community Factors Triggering Hate Crimes

Bias is a complex phenomenon that cannot be entirely explained by individual personality traits, as indicated by previous scholarly investigations (Akrami et al., 2011). The sociological literature emphasizes the importance of structural and contextual factors that contribute to the emergence of bias, including patterns of social contact, intergroup competition, and economic relations. By considering these factors, insights into the triggers of socioeconomic and symbolic threats that lead to hate crimes targeting specific minority groups can be gained (Meuleman et al., 2019).

The sociological research on community crime rates stems from social disorganization theory, which posits that high economic deprivation and racial diversity erode social cohesion and informal social control, leading to the deterioration of social relationships, which ultimately results in increases in criminal offending (Hirschfield & Bowers, 1997; Shaw & McKay, 1942). Low organizational participation, characteristic of impoverished communities, implicates weaker relational ties and thus, a lower willingness to intervene against hate crimes. Additionally, ethnic heterogeneity can reduce residents' ability to supervise and control groups due to cultural differences in values concerning the adequate quantity and quality of supervision of young people.

Economic Deprivation

Crime is widely thought to be significantly influenced by economic conditions in the community where the offender lives (D'Alessio et al., 2002; Green et al., 2001; Scheuerman et al., 2020). Scholars argue that when individuals experience economic deprivation, such as poverty or unemployment, it intensifies competition among different groups for limited economic resources, thereby triggering socioeconomic threats. Consequently, certain individuals perceive minority groups as competitors for employment or welfare benefits, leading to acts of aggression against these minority groups as a means to protect their resources or retaliate against those seen as culprits of these conditions (McDevitt et al., 2002).

Economic deprivation within a particular area has been consistently found to be a robust predictor of crime, thereby transmitting the effects of structural characteristics on criminal behaviour within that area (Grattet, 2009; Kang, 2016; Macdonald et al., 2017; McCall et al., 2010; Morenoff et al., 2001; Pratt & Cullen, 2005). Although some contrary evidence exists with studies reporting negative relationships (Kaylen & Pridemore, 2013), or no significant relationship at all (Green et al., 1998, 2001), the majority of the literature seems to support this theory. Interestingly, a study by Gladfelter et al. (2015) conducted in the US, found that absolute economic deprivation is positively related to hate crimes against Black and Hispanic people, but not against White people. This seems to highlight that the relationship between predictors and different types of hate crimes varies depending on the targeted group. In the context of Germany, absolute deprivation was positively associated with hate crimes targeting refugees, although this relationship was weaker in Western counties (Rees et al., 2019).

As the effects of absolute economic deprivation were established, subsequent studies explored the role of relative economic deprivation in driving hate crimes (Runciman, 1966). Relative deprivation theory states that wealth disparities between people within a community and individuals' expectations about their position influence crime. When large differences in wealth exist, people assess their position based on these disparities and act guided by their belief in fairness in their position. Consequently, individuals may retaliate against minority groups perceived as a socioeconomic threat, because they believe them to not be deserving of the economic resources they hold, including employment or welfare provisions. Furthermore, in unequal communities, the effects of economic deprivation extend beyond those individuals directly experiencing it, as individuals fear losing what they have. That is, economic deprivation in a county affects all adolescents residing in it (Krieg, 2021). However, evidence for relative economic deprivation theory is highly mixed. Some studies found a positive association between hate crimes and relative economic deprivation (Hipp, 2007; Hsieh & Pugh, 1993; Kawachi et al., 1999; McCall et al., 2010; Sampson & Groves, 1989), while others have found a negative link (Kang, 2016), and some found no relationship at all (Green et al., 2001; Pridemore, 2011).

Hate crimes are more likely to be committed by individuals who perceive a disadvantage in terms of resources compared to others than those individuals who do not feel such a disadvantage (Scheuerman et al., 2020). The awareness and judgement of their social position vary among adolescents, whether they live in more equal or unequal communities. That is, the impact of intergroup competition arising from relative deprivation is not uniform across all groups in society (Meuleman et al., 2019). When adolescents feel deprived, there is

a discrepancy between the fulfilment and non-fulfilment of certain economic desires and expectations, leading to attribute blame to groups they perceive as posing a high socioeconomic threat (Seipel & Rippl, 2000). Thus, feelings of frustration and anger stemming from a perceived individual lack of resources or opportunities can moderate the relationship between hate crimes and relative deprivation.

The concept of change plays a central role in social disorganization, as it emphasizes that changes at the community level can have a significant influence on social cohesion. However, it is noteworthy that most studies in this field still adopt a cross-sectional approach (Kubrin & Weitzer, 2003). Recent research suggests that the relationship between hate crimes and economic deprivation may be better explained by changes in economic conditions rather than by the economic conditions themselves (Iwama, 2018). That is, when a community undergoes changes, such as increasing inequality, these changes have a stronger effect on individuals compared to the current levels of inequality, as individuals tend to perceive the initial levels of inequality as the norm. This highlights the importance of considering the dynamics of change and its impact on hate crimes, rather than solely focusing on static measures of inequality.

The existing body of literature examining the relationship between hate crimes and economic deprivation suggests that absolute deprivation is a significant factor, while the role of relative deprivation requires further investigation. Additionally, authors argued that changes in inequality can serve as a meaningful predictor of hate crimes, highlighting the need to examine the effects of these changes. Given that economic deprivation triggers socioeconomic threats, it is hypothesized that changes in economic inequality at the county level can predict victimization of minority groups such as homeless, disabled, foreign and Jewish individuals, who are perceived as competing and dissident groups (H2a). Furthermore, it is expected that adolescents experiencing strong feelings of relative deprivation will particularly foster prejudice towards these competing and dissident groups (Meuleman et al., 2019). Thus, moderating the relationship between hate crimes and changes in economic inequality (H2b). Finally, economic inequality is not thought to trigger symbolic threats, thus no impact on hate crimes targeting homosexual or Muslim people (i.e., deviant groups) is expected.

Hypothesis 2a: *Increases in economic inequality within the county will be related to adolescents reporting higher perpetration of hate crimes targeting minority groups perceived as competing and dissident groups*

Hypothesis 2b: *Due to adolescents that feel unfairly more economically deprived than others, increases in economic inequality will be related to higher report of hate crimes targeting minority groups perceived as competing and dissident groups*

Immigration

The relationship between hate crimes and racial diversity could be explained by two competing theories, namely contact theory and threat theory. Contact theory proposes that increased interpersonal interactions, ranging from chance encounters to friendships, between individuals from the majority group and immigrants, result in a decrease in prejudices held by the majority towards minority groups (Allport, 1954; Pettigrew & Tropp, 2011). The proportion of foreigners living within an area can serve as a structural indicator of contact opportunities (Rees et al., 2019). In Germany, research has indicated that areas with a higher proportion of foreigners have a lower prevalence of hate crimes targeting them (Wagner et al., 2020).

Whereas contact theory states that increased interaction between members of different groups reduces prejudice, threat theories posit that increased contact triggers symbolic threats. These threats occur when the majority group perceives immigrant minority groups as challenging shared norms and values (Benier et al., 2016; Chiricos et al., 1997; Scheuerman et al., 2020). Moreover, racial diversity can hamper communication, hindering communities' ability to address problems and achieve common goals (Kornhauser, 1978). The combination of perceived symbolic threat and limited intergroup communication can lead to higher levels of intergroup conflict, including hate crimes. Hate crimes serve as a mechanism of informal social control, with offenders driven by a desire to retaliate against perceived degradation or attacks on their group, while delivering a message to minority groups that they are not welcome in the area (Benier et al., 2016; McDevitt et al., 2002; Scheuerman et al., 2020). There is extensive literature supporting threat theory (Green et al., 1998, 2001; Kaylen & Pridemore, 2013; Pratt & Cullen, 2005; Sampson et al., 1997; Sampson & Groves, 1989). However, a recent study did not find this association (Benier et al., 2016), and in Germany, the proportion of foreigners was related to hate crimes only in East Germany (Rees et al., 2019).

Scholars have further developed threat theory and have begun to explore the idea that hate crimes may not solely be attributed to racial diversity but instead to changes in the population composition (Iwama, 2018; Scheuerman et al., 2020). Increases in immigration, rather than the proportion of foreigners living in a specific area, may explain the occurrence of hate crimes. Similarly to the previous section discussing economic deprivation, individuals

may perceive the initial proportion of foreigners as the norm but an increase in immigration could trigger symbolic threats. Previous research has indeed indicated that hate crimes are associated with demographic shifts occurring at the community level, with higher rates of hate crimes observed in areas experiencing immigration (Benier et al., 2016). However, a recent study examining changes over time in hate crimes and immigration found a negative relationship (Kros et al., 2022).

When individuals perceive an increased proportion of foreigners in an area as a threat to their shared norms and values, symbolic threats can also extend to other minority groups perceived as challenging the majority's norms and values. These minority groups may include individuals from within the group, such as Jews, homosexuals, and Muslims (Meuleman et al., 2019). While foreigners may be seen as the primary culprits, the actions or identities of these other minority groups may be viewed as further conflicting with the prevailing majority values and norms. In a situation where the increased presence of foreigners is already seen as degrading these shared values, offenders may perceive these other minority groups as challenging these values from within the ingroup (Schiffer & Wagner, 2011). As a result, they would direct their hostility towards these minority groups as well. Minorities who are not perceived as a symbolic threat, such as homeless or disabled people, are not affected by this dynamic, as they are not seen as challenging shared values.

When offenders perceive minorities as symbolic threats challenging shared values and norms, they regard these values not as individual but as collective, attributing them to the majority group. Consequently, offenders perceive their actions not merely as self-protection but as a means of defending their entire group. This perception leads them to believe that they have the support of the community in their actions (Benier et al., 2016; McDevitt et al., 2002). Furthermore, individuals who perceive their group as disadvantaged or in an inferior position compared to other groups within the community are prone to developing prejudice towards those groups (Meuleman et al., 2009). This emphasizes the importance of social comparisons in this context, specifically group comparisons rather than individual comparisons. In essence, when individuals feel their group is worse-off than other groups, increases in immigration are more likely to trigger symbolic threats. Conversely, if individuals perceive their group as better-off, symbolic threats are less likely to be triggered.

Although evidence exists for both contact and threat theories, the literature on threat theories has garnered strong empirical support. According to threat theory, a positive link is expected between changes in immigration and hate crimes targeting minorities perceived as a symbolic threat, including foreigner, Jew, homosexual and Muslim individuals. Additionally,

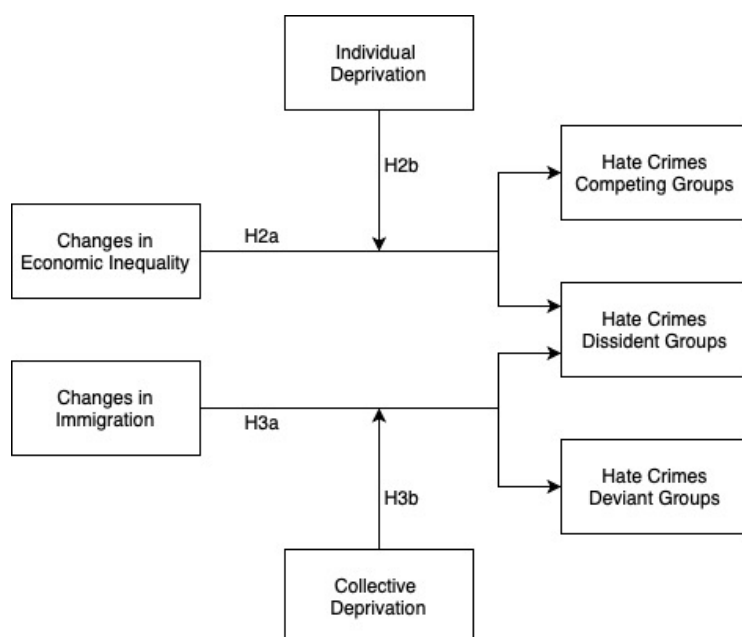
adolescents who perceive their group, in this case, Germans, as being disadvantaged in comparison to foreigners, are more likely to engage in hate crimes targeting these specific groups. The model proposed for further study is illustrated in Figure 2.

Hypothesis 3a: *Increases in the proportion of foreigners within the county will be related to adolescents reporting higher perpetration of hate crimes targeting minority groups perceived as dissident and deviant groups*

Hypothesis 3b: *Due to adolescents that feel that Germans are more deprived than foreigners, increases in immigration will be related to higher report of hate crimes targeting minority groups perceived as dissident and deviant groups*

Figure 2

Conceptual Model



Note. H1 corresponds to the classification of hate crimes against minorities into three groups.

Methods

The current study uses data from the Lower Saxony School Survey of 2019, conducted by the Criminological Research Institute of Lower Saxony (KFN), in Germany. This survey aimed to collect data on the nature and prevalence of juvenile crime, including violent offences,

property crimes, as well as self-reported victimhood and perpetration. The study was conducted from 26th February to 3rd July 2019. The survey itself was conducted in class, usually in the presence of a teacher (see Krieg et al., 2022, for further details on survey administration). The questionnaire consisted of four modules and contained largely tested questions on the topic of violence. Additionally, county socio-structural characteristics were obtained from the Lower Saxony State Office for Statistics and the Forsa-Bus 2020 census.

Participants

In 2019, there were 79,140 students in Lower Saxony (Krieg et al., 2022). For the survey, a random drawing of 1,294 classes stratified by school type (special-needs, lower secondary, integrated secondary, intermediate secondary, comprehensive, upper secondary) was selected, which corresponded to 30,066 students. Out of the 1,294 contacted classes, 762 agreed to participate in the survey (response rate class level: 58.90%). The most common reason for non-participation at the school level (41.10%) was due to time-related reasons (25.98%). Among the participating classes, there were 17,986 students, of which 12,444 completed the questionnaire (response rate student level: 69.20%). The two primary reasons for non-participation at the student level (30.80%) were lack of parental consent (15.37%) and illness (4.26%). The final sample size, excluding 64 students who were not residing in Lower Saxony at the time of the survey, is 12,380 respondents. This number corresponds to approximately one in eight students in Lower Saxony in 2019 and corresponds well with the proportional representation of ninth graders in terms of school-type composition.

Dependent Variable: Hate Crime

The survey provides information on adolescents' criminal behaviour specifically targeting minorities. This was measured by the following item: "In the last twelve months, have you done the following things to a person solely because they have a disability, are homosexual, homeless, have a different political opinion, or are of foreign origin?". Adolescents were asked whether they had due to their group affiliation insulted a person, intentionally damaged their property, punched or kicked them, threatened them with words, or threatened them with a weapon (e.g., knife), [...]. The group affiliations queried were people with disabilities, homosexual people, homeless people, [...], foreigners, Jews, and Muslims (Krieg et al., 2022, p. 132). Thus, due to the nature of the survey question, the dependent variable represents offending that is motivated due to the victim's perceived membership.

From the previous question, six composite scores (range 0 to 5) were created related to criminal behaviour targeting each minority group. These scores were derived by summing the responses to the five items related to criminal behaviour (insult, property damage, threat with words, assault, and threat with weapon). Each item corresponds to a value of 0 (not engaged in behaviour) or 1 (engaged in behaviour). Therefore, if an individual has committed any of the criminal behaviours, their score for that specific minority group would be 1. If they have engaged in all five behaviours, their score would be 5. These composite scores represent an intensity scale, indicating the extent of hate crimes targeting each minority group.

Independent Variables: County Factors

Two variables at the county level, namely change in economic inequality and change in immigration, were constructed using administrative data. These variables are derived for each *Landkreis*, which are administrative counties and the second-level administrative subdivision below the federal states in Germany. Counties vary in terms of size and population. In the case of Lower Saxony, there are 45 counties, ranging from 48,460 to 1,156,011 residents for the year 2015.

The variable representing change in economic inequality was derived from the Forsa-Bus 2020 data. GINI coefficients were obtained for each county, both for the year 2015 and the average of 2018 and 2019, when the survey was conducted. The GINI coefficients for 2015 ranged from 0.23 to 0.32, while for 2018-2019, they ranged from 0.21 to 0.32. To capture the change in economic inequality, an absolute change variable was calculated for each county. This variable ranged from -0.08 to 0.03, indicating that GINI coefficients for most counties did not experience big changes over the given period. For example, a score of -0.05 signifies a decrease of 0.05 in the GINI coefficient for a particular county over the span of four years.

The Lower Saxony State Office for Statistics provided official numbers of residents per county, including citizens' legal status (i.e., foreigners). In 2015, the proportion of foreigners in counties varied from 4.06% to 14.62%, while for 2018-2019, it ranged from 4.76% to 19.13%. This information was used to create a variable representing the change in the proportion of foreigners per county between 2015 and 2018-2019. The resulting variable had a range of 0.001 to 0.06, indicating slight increases in immigration within counties. For example, a score of 0.05 signifies a 5% increase in the proportion of foreigners within a county between 2015 and 2018-2019.

Moderator and Control Variables: Individual Factors

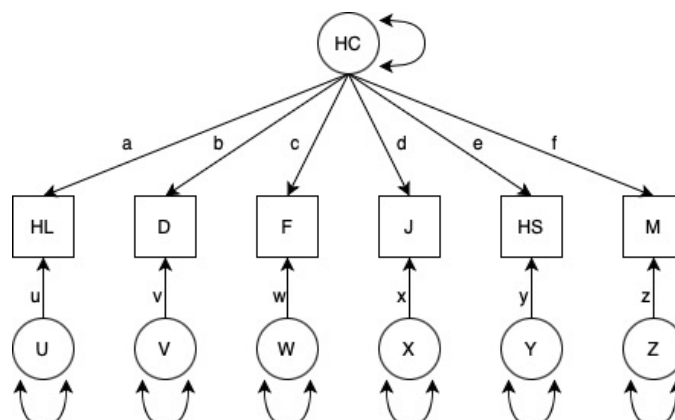
The survey included two items capturing feelings of relative deprivation. Individual relative deprivation was measured by the item: “In comparison to how others live here in Germany: How much do you think you get?” (1 = more than the just share, 2 = the just share, 3 = less than the just share, 4 = way less than the just share). Collective relative deprivation was measured by the item: “If you compare the situation of Germans with the situation of foreigners living in Germany, how much poorer or richer are Germans compared to foreigners” (1 = much poorer, 2 = a little poorer, 3 = about the same, 4 = a little richer, 5 = much richer). Moreover, adolescents’ gender (0 = male, 1 = female, 2 = other), the type of school they attend (0 = not Gymnasium or 1 = Gymnasium), and their migration background (0 = without background, 1 = with background), will be controlled for.

Power and Sample Size

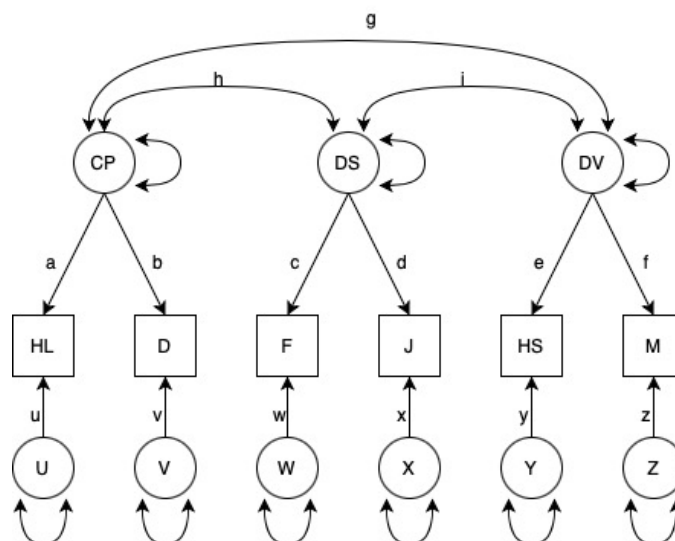
An a priori power analysis was performed using G*Power to determine the minimum sample size required to test the study hypotheses. For Hypotheses 2 and 3, results indicated that a sample size of $N = 431$ was required to achieve 99% power for detecting a small effect, at a significance criterion of $\alpha = .05$, in a multiple linear regression model with seven predictors. Given that the actual sample size is 12,380 participants, it is expected to have sufficient power to be able to detect any effect sizes that may be present.

Statistical Analyses

The first hypothesis, which states that offenders victimize different minority groups based on the differential threat approach, will be tested through confirmatory factor analysis. Two models will be tested to see which one fits the data better. In Model A (Figure 3), the six minority groups are nested into one latent variable, hate crimes. This model would be equivalent to the null hypothesis. In Model B (Figure 4), crimes against homeless and disabled people are nested within one latent variable, representing competing groups, whereas crimes against foreign and Jewish people are nested within another latent variable, representing dissident groups; and crimes against homosexual and Muslim are nested within the latent variable representing deviant groups. In Model B, the three latent variables are assumed to be correlated.

Figure 3*Model A. General Hate Crimes*

Note. HC stands for hate crimes, HL stands for homeless, D for disabled, F for foreigners, J for Jewish, HS for homosexual, and M for Muslim.

Figure 4*Model B. Competing, Dissident and Deviant groups*

Note. CP stands for competing group, DS for dissident group, and DV for deviant group.

In Structural Equation Modelling (SEM), there are two general requirements for identifying a model. First, the model must have at least zero degrees of freedom ($df_M \geq 0$). Second, each latent variable must be assigned a scale, including error terms. For Model A, there are 21 observations. Fixing latent variables variance to 1, results in six free parameters

(i.e., direct effects of variable HC to measured variables). Thus, $df_A = 15$. For model B there are also 21 observations. When fixing latent variables' variance to 1, results in nine free parameters (i.e., six direct effects of latent variables to measured variables, and three covariances). Thus, $df_B = 12$. Consequently, both Model A and Model B meet the two general requirements, allowing for performing a Confirmatory Factor Analysis (CFA).

Initially, the second and third hypotheses were intended to be tested using a standard multilevel approach, which accounts for the interdependence of adolescents within counties. To assess the proportion of variance in hate crimes attributable to the county, Intraclass Correlation Coefficients (ICC) were calculated (Appendix A). However, the ICCs yielded very low values, with the highest ICC of 0.004 observed for crimes targeting homosexual people. This finding indicates that only 0.4% of the variance in hate crimes against homosexual people is attributable to the county in which the adolescent lives. Results indicate that hate crimes do not significantly vary by county and that a multilevel analysis cannot be conducted as the ICCs fail to meet the standard cut-off criterion ($ICC > .10$). Consequently, a multiple linear regression approach will be followed. Descriptive statistics and bivariate analysis will be reported. Then, three models will be tested. The first model will include the main predictors of change in economic inequality and immigration. The second model will incorporate the moderating effects of relative deprivation. The final model will control for adolescents' gender, the type of school they attend, and their migration background.

Missing Data

Variables with missing data had less than 5% missingness (see Appendix B for details). However, participants with missing data on the relative deprivation variables scored significantly different in hate crimes than participants without missing data. Moreover, as 242 participants did not answer the outcome variables, data were considered missing at random (MAR). Thus, the predictive mean matching (PMM) imputation method was employed. Nonetheless, all results presented in the following section are based on complete case analysis as the estimated parameters did not significantly differ between complete cases and PMM.

Results

Preliminary Analyses

The average age of adolescents was 15.05 years (range 13 to 19, $SD = 0.69$); from which approximately half were male, half were female, and nearly one in a hundred identified with

another gender (Table 1). The majority of students did not have a migration background and attended schools other than Gymnasium. Among adolescents without a migration background, 29.16% attended a Gymnasium ($n = 3256$), while 60.84% attended another type of school ($n = 5059$). For adolescents with a migration background, these percentages were 29.98% ($n = 1136$), and 70.02% ($n = 2653$), respectively.

Table 1

Adolescents by Gender, School Type and Migration Background

Gender	Gymnasium		Migration background		Total
	Yes	No	Yes	No	
Male	2040	4182	1852	4203	6222 (50.40%)
Female	2358	3673	1898	4043	6031 (48.86%)
Other	35	55	33	50	90 (0.73%)
Total	4439 (35.86%)	7939 (64.14%)	3789 (31.30%)	8315 (68.70%)	

Means and standard deviations for different types of hate crimes and overall hate crimes are shown in Table 2. These results are shown at the individual and county level. The findings indicate that, considering all types of hate crimes, the average adolescent reports having committed 0.31 hate crimes ($SD = 1.36$). This suggests that most adolescents do not report hate crime offending, although there is a great deal of variation at the individual level. Among the various types of hate crimes, adolescents report engaging the most in hate crimes targeting foreigners ($M = 0.08$, $SD = 0.44$) and disabled people ($M = 0.08$, $SD = 0.54$). Conversely, the group they report targeting the least is Jewish people ($M = 0.02$, $SD = 0.26$).

At the county level, mean values vary widely compared to means at the individual level, although they are also generally low, ranging from 0 to 0.26 for specific types of hate crime. Except for hate crimes targeting Muslims, there are counties where no hate crimes against other minority groups were self-reported. Hence, results suggest an overall low prevalence of hate crimes across the studied counties, with certain counties reporting almost no incidents (lowest $M = 0.03$). Across all counties, the average adolescent has committed less than one hate crime

(highest $M = 0.75$). However, this also indicates that in all counties there is some self-report of hate crime offending.

Table 2

Descriptive Statistics of Hate Crimes

Hate crime	Individual level			County level	
	M	SD	95% CI	Lowest M	Highest M
Homeless	0.03	0.31	[0.03 – 0.04] ***	0.00	0.08
Disabled	0.08	0.54	[0.07 – 0.09] ***	0.00	0.26
Foreigner	0.08	0.44	[0.07 – 0.08] ***	0.00	0.17
Jew	0.02	0.26	[0.02 – 0.03] ***	0.00	0.06
Homosexual	0.07	0.41	[0.06 – 0.07] ***	0.00	0.22
Muslim	0.04	0.33	[0.03 – 0.04] ***	0.01	0.09
Total	0.31	1.36	[0.29 – 0.33] ***	0.03	0.75

Note. $N = 12,136$. Range of all variables 0 – 5; except for Total, range 0 – 30. *** $p < .001$

Descriptive statistics for the main predictor variables and relative deprivation measures are displayed in Table 3. The findings indicate that, overall, wealth distribution in Lower Saxony counties is becoming more equitable ($M = -0.02$, $SD = 0.02$). This suggests a reduction in wealth disparities within counties over four years. Additionally, the results indicate an average increase in the proportion of foreigners residing in these counties ($M = 0.02$, $SD = 0.01$). That is, from when the adolescents were around 11 years old to when they were 15, the proportion of foreigners in the counties where they live increased by 2%.

To further assess the central tendency of the data, trimmed and winsorized means were calculated for all variables. Regarding changes in GINI, results showed that the data does not contain extreme values significantly affecting the mean ($M_{\text{trim}} = -0.02$; $M_{\text{win}} = -0.02$). The median was slightly lower than the mean, indicating that this decrease in wealth disparities within counties is very modest. The findings regarding immigration are also considered robust, as the trimmed mean ($M_{\text{trim}} = 0.02$), the winsorized mean ($M_{\text{win}} = 0.02$), and the median are equal to the mean.

Table 3*Descriptive Statistics of Explanatory and Moderator Variables.*

Variables	<i>M</i>	<i>SD</i>	<i>Mdn</i>	MAD
Change in GINI	-0.02	0.02	-0.01	0.017
Change in foreigners	0.02	0.01	0.02	0.006
Individual deprivation	1.44	2.19	2.00	0.000
Collective deprivation	3.25	2.48	4.00	1.483

Note. GINI and Foreigners, $N = 43$. Individual deprivation, $N = 11898$. Collective deprivation, $N = 11960$. MAD

= Median absolute deviation

Regarding self-reported feelings of deprivation, results showed that, on average, adolescents reported feeling that they received a fair share when comparing themselves to how others live in Germany ($M = 1.44$; $M_{\text{trim}} = 1.77$; $M_{\text{win}} = 1.71$; $Mdn = 2$). That is, on average, adolescents do not experience individual deprivation. However, there is considerable variability in their responses ($SD = 2.19$), with approximately one in ten adolescents reporting feeling like they had less than the just share. Regarding collective relative deprivation, the average responses indicate that adolescents perceive Germans and foreigners to have roughly equal wealth ($M = 3.25$, $SD = 2.48$). However, the majority of students reported feeling that Germans are slightly richer than foreigners ($M_{\text{trim}} = 3.69$; $M_{\text{win}} = 3.63$; $Mdn = 4$). These results reveal a significant number of responses at the extremes, with approximately one in ten adolescents reporting that Germans are either slightly or significantly poorer than foreigners.

Bivariate correlations among the variables examined in this study are displayed in Table 4. All types of hate crimes are positively and significantly correlated, indicating that adolescents who report committing a hate crime targeting one minority group are more likely to target another minority group. The highest correlation was observed between crimes against Jewish and Muslim individuals ($r(12134) = .36$, $p < .001$), while the lowest was between crimes against disabled and foreign individuals ($r(12134) = .10$, $p < .001$). The results of the current sample do not support the expectations based on the differentiated threat approach, which predicted stronger correlations between hate crimes against homeless and disabled individuals, between those against foreign and Jewish individuals, and between those against homosexuals and Muslim individuals.

Table 4*Correlation (Pearson) among Study Variables*

	(1) Homeless	(2) Disabled	(3) Foreign	(4) Jew	(5) Homosexual	(6) Muslim	(7) Ind dep	(8) Coll dep	(9) Chg. GINI	(10) Chg. foreign
(1)										
(2)	.19***									
(3)	.19***	.10***								
(4)	.32***	.14***	.28***							
(5)	.33***	.15***	.20***	.32***						
(6)	.22***	.14***	.33***	.36***	.24***					
(7)	.02	.02*	.02*	.02**	.03***	.03**				
(8)	-.00	-.03**	-.05***	-.01	-.04***	-.02**	-.18***			
(9)	-.00	-.02	-.02*	-.02*	-.03***	-.01	-.02*	-.01		
(10)	.02*	-.01	.00	.00	.03**	.01	.01	.01	-.04***	

Note. $N = 11679 - 12380$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Interestingly, as counties experienced a decrease in the GINI coefficient, there was an increase in the proportion of foreigners residing in those countries ($r(12376) = -.04, p < .001$). However, the associations between these measures and hate crimes were weak and only statistically significant in some cases. The literature suggested that economic inequality would be linked to hate crimes against competing and dissident groups, and immigration to hate crimes against dissident and deviant groups. Contrary to expectation, GINI was negatively correlated with hate crimes against dissident groups ($r_{\text{foreign}}(12134) = -.02, p = .02$; $r_{\text{Jew}}(12134) = -.02, p = .05$). Additionally, GINI was negatively correlated with hate crimes against homosexual people ($r(12134) = -.03, p < .001$). Furthermore, although the proportion of foreigners was positively correlated with hate crimes against homosexual people ($r(12134) = .03, p = .002$), it was also positively correlated with hate crimes against homeless individuals ($r(12134) = .02, p = .01$).

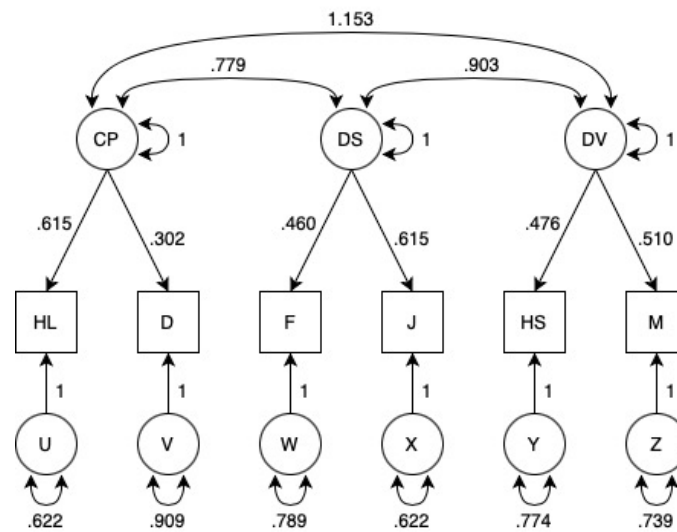
Feelings of individual and collective deprivation exhibited weak correlations with hate crimes, when statistically significant. Interestingly, as individual deprivation increased (i.e.,

adolescents reported receiving less than a fair share), feelings of collective deprivation decreased (i.e., adolescents expressed that Germans were poorer than foreigners), indicating that adolescents feeling individually deprived were also more likely to report feeling collectively deprived ($r(11673) = -.18, p < .001$). Additionally, individual deprivation showed a negative correlation with GINI, suggesting that as individuals felt more deprived, counties experienced a trend towards more equal distribution ($r(11894) = -.02, p = .04$), contrary to expectations. Furthermore, collective deprivation was not significantly associated with the proportion of foreigners residing in counties. Therefore, bivariate results do not show support for H2b and H3b, although further investigation is necessary to gain a deeper understanding of these relationships.

Confirmatory Factor Analysis

To examine whether adopting the categorization of minorities based on the differentiated threat approach or examining each hate crime individually provides a more useful framework, a confirmatory factor model was performed using the *lavaan* package in R. Two models were estimated using the maximum likelihood estimator (Figures 3 and 4). The results of Model B suggest that there are distinct differences among the six hate crime types, supporting their categorization into competing, dissident, and deviant groups (Figure 5). The three groups covary significantly, suggesting the presence of a common factor influencing all hate crime types.

The goodness-of-fit statistics indicate that both Model A and B exhibited a good fit (Table 5). Model B showed a slightly better fit than Model A, indicated by a higher CFI and a lower SRMR. Especially, if it is also considered that the lower bound of the confidence interval for the RMSEA is .060 for both models. Additionally, both AIC and BIC were lower for Model B, further supporting its slightly superior fit. Therefore, it can be concluded that classifying hate crimes into these three groups is marginally better than studying them individually, supporting H1. Three variables (range 0 to 10) representing these groups were created by summing the hate crimes associated with each group.

Figure 5*Estimated Path Coefficients of Model B*

Note. $N = 12136$. All paths are significant at $p < .001$

Table 5*Model Fit Indices of Models A and B*

Model	χ^2	df	RMSEA	CFI	SRMR	AIC	BIC
Single factor	469.90***	9	.065 [.060, .070]	.943	.033	54187.98	54276.83
Three factor	326.56***	6	.066 [.060, .073]	.960	.028	54050.65	54161.71

Note. $N = 12136$, *** $p < .001$

Multiple linear regression

To investigate the effects of changes in economic inequality and immigration on self-reported hate crime offending among adolescents, specifically targeting minorities perceived as competing, dissident or deviant groups, a multiple linear regression analysis was conducted. Separate regression models were conducted for each of the aforementioned groups (Table 6). In Appendix C, the results are reproduced for each type of hate crime, without employing the group classification, to assess potential differences in the relationships. Additionally, results controlling for the levels of economic inequality and immigration in 2015 are also reported, as the effect of an increase in immigration may vary depending on whether a county initially had

a low or high level of foreign residents. Furthermore, a model assumption check is reported in Appendix D.

Table 6

Model 1. Effects of Economic Inequality and Immigration on Hate Crimes by Group

	Competing		Dissident		Deviant	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	0.06***	0.02	0.09***	0.02	0.05***	0.02
Change in GINI	-0.45	0.35	-0.80**	0.29	-0.88**	0.30
Change in foreigners	1.99*	0.85	-0.12	0.72	1.82*	0.74
Model statistics						
<i>R</i> ²	.0004		.0004		.0011	
<i>F</i>	3.70*		3.67*		7.56***	
<i>df</i>	2, 12133		2, 12133		2, 12133	

Note. *N* = 12136. **p* < .05, ***p* < .01, ****p* < .001

The three regression models were statistically significant, as indicated by the *F*-statistic. Results revealed a negative relationship between changes in economic inequality and hate crimes targeting dissident and deviant groups. Specifically, an increase of 0.0 in the GINI coefficient, indicating a rise in inequality, was associated with a decrease of nearly one self-reported hate crime targeting minorities perceived as dissident and deviant groups (95% CI_{dissident} [-1.37, -0.22]; 95% CI_{deviant} [-1.46, -0.29]). These findings remained consistent, with similar estimates and standard errors, when the GINI coefficient in 2015 was controlled for (Table C4). However, when examining each type of hate crime separately, the significant effects were only observed for hate crimes targeting homosexual individuals. No definitive conclusions can be drawn regarding the relationships with other types of hate crimes, as the models were not statistically significant (Table C1). These results contradict the expected relationship proposed in H2a, which predicted a positive relationship between changes in economic inequality and hate crimes targeting competing and dissident groups.

Initially, changes in immigration are positively associated with hate crimes targeting competing and deviant groups. Specifically, for a 1% increase in the proportion of foreigners

within a county, hate crimes increase by almost two self-reported incidents against minorities perceived as competing and deviant groups (95% $CI_{\text{competing}}$ [0.32, 3.66]; 95% CI_{deviant} [0.37, 3.26]). Upon examining each type of hate crime separately, this relationship is only observed for crimes targeting homeless and homosexual individuals. Moreover, when controlling for the initial number of foreign residents, the significant effects disappear. Therefore, the results do not support H3a, which predicted a positive relationship between changes in immigration and hate crimes against dissident and deviant groups. Furthermore, the low R^2 values indicate that the regression models hardly explain any of the variance in self-reported hate crimes. This limits any conclusions regarding H2a and H3a.

To ascertain the potential moderating effects of individual and collective deprivation on the relationship between hate crimes and changes in economic inequality and immigration, multiple regression models incorporating interaction terms were conducted (Table 7). The findings were not statistically significant. Consequently, due to the non-significant results, it is not possible to make inferences for H2b and H3b, as any observed effects may be attributable to random chance rather than meaningful relationships.

Table 7

Model 2. Moderator Effects of Deprivation Feelings

	Competing		Dissident		Deviant	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	0.12	0.08	0.26***	0.06	0.09	0.07
Change in GINI	0.34	1.14	-0.08	0.97	-1.58	0.98
Change in foreigners	0.70	3.44	-5.20	2.92	1.43	2.97
Individual deprivation	0.01	0.01	0.01	0.01	0.04**	0.01
Collective deprivation	-0.02	0.02	-0.05**	0.02	-0.03	0.02
GINI*Ind. Dep.	-0.40	0.57	-0.38	0.48	0.38	0.49
Foreigners*Coll. Dep.	0.41	0.92	1.40	0.78	0.11	0.79
Model statistics						
R^2	.002		.003		.004	
F	3.03**		6.15***		8.10***	
df	6, 11460		6, 11460		6, 11460	

Note. $N = 11467$. * $p < .05$, ** $p < .01$, *** $p < .001$

In these models, two effects were statistically significant. Firstly, higher levels of individual deprivation were positively associated with self-reported hate crimes targeting deviant groups (95% CI_{deviant} [0.01, 0.06]). Secondly, lower levels of collective deprivation were negatively associated with hate crimes against dissident groups (95% $CI_{\text{dissident}}$ [-0.08, -0.02]). These relationships persisted after controlling for initial economic inequality and immigration (Table C5). Upon examining the six types of hate crimes separately, the effect of individual deprivation remained for both minority groups perceived as deviant (Table C2). The effect of collective deprivation was only observed in hate crimes against foreigners and not against Jewish individuals. Although the strength of these relationships is moderate, it is noteworthy that considering the overall low prevalence of hate crimes and the low standard errors for these effects, they hold practical significance.

The final model incorporated control variables for individual characteristics, including gender, school, and migration background (Table 8). All three models were statistically significant. Nevertheless, R^2 values only increased marginally after the inclusion of control variables. Thus, the overall explanatory capacity of the models remained low.

In terms of gender differences, female adolescents consistently reported lower levels of hate crime perpetration compared to males (95% $CI_{\text{competing}}$ [-0.09, -0.04]; 95% $CI_{\text{dissident}}$ [-0.11, -0.07]; 95% CI_{deviant} [-0.13, -0.09]). Surprisingly, adolescents identifying with another gender reported higher levels of perpetration than males across all three minority groups (95% $CI_{\text{competing}}$ [0.30, 0.61]; 95% $CI_{\text{dissident}}$ [0.27, 0.52]; 95% CI_{deviant} [0.21, 0.46]). Effect sizes for this group were substantially larger compared to those for other control variables. Additionally, attending a Gymnasium was associated with lower perpetration against competing and dissident groups (95% $CI_{\text{competing}}$ [-0.07, -0.02]; 95% $CI_{\text{dissident}}$ [-0.08, -0.03]). Having a migration background was associated with higher levels of hate crimes (95% $CI_{\text{competing}}$ [0.05, 0.11]; 95% $CI_{\text{dissident}}$ [0.0005, 0.05]; 95% CI_{deviant} [0.06, 0.11]). These relationships were consistent in replicated models (Tables C3 and C6).

After controlling for the aforementioned variables, only one effect remains statistically significant. Specifically, collective deprivation is negatively related to hate crimes targeting dissident groups (95% $CI_{\text{dissident}}$ [-0.08, -0.02]). This effect persists after controlling for the level of immigration in 2015. When examining the six types of hate crime separately, this effect is observed only for hate crimes targeting foreigners. Moreover, the effect of changes in immigration on hate crimes targeting dissident groups achieves statistical significance (95% $CI_{\text{dissident}}$ [-11.83, -0.30]). However, this effect disappears in further controls (Tables C3 and C6).

Table 8*Model 3. Effects Controlled by Gender, School, and Migration Background*

	Competing		Dissident		Deviant	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	0.18*	0.08	0.32***	0.06	0.16*	0.07
Change in GINI	0.45	1.15	-0.15	0.97	-1.44	0.98
Change in foreigners	-1.26	3.47	-6.06*	2.94	0.31	2.96
Individual deprivation	0.00	0.01	0.01	0.01	0.02	0.01
Collective deprivation	-0.02	0.02	-0.05**	0.02	-0.03	0.02
GINI*Ind dep	-0.49	0.58	-0.33	0.49	0.26	0.49
Foreigners*Coll dep	0.66	0.92	1.47	0.78	0.15	0.79
Gender (female)	-0.06***	0.01	-0.09***	0.01	-0.11***	0.01
Gender (other)	0.45***	0.08	0.40***	0.06	0.34***	0.07
Gymnasium (yes)	-0.04**	0.01	-0.05***	0.01	-0.02	0.01
Migration backg. (yes)	0.08***	0.01	0.02*	0.01	0.09***	0.01
Model statistics						
<i>R</i> ²	.01		.02		.02	
<i>F</i>	12.91***		18.21***		24.06***	
<i>df</i>	10, 11293		10, 11293		10, 11293	

Note. *N* = 11304. **p* < .05, ***p* < .01, ****p* < .001

Discussion

The primary aim of this study was to empirically investigate the relationship between various types of hate crimes and changes in economic inequality and immigration. Based on Meuleman et al.'s (2019) differentiated threat approach, it focused on whether distinct categories of minorities could be identified. Then, the focal point of the investigation revolved around the question of how changes in economic inequality and immigration from 2015 to 2019 were related to self-reported hate crimes among adolescents across counties in Lower Saxony, Germany. Furthermore, the study explored the potential moderating influence of individual and collective relative deprivation on these relationships.

Consistent with the first hypothesis, results supported the classification of minority groups into competing, dissident, and deviant groups. In the differentiated threat approach, homeless individuals were theoretically classified as a competing group, foreign and Jewish individuals as dissident groups, and homosexual and Muslim individuals as deviant groups (Meuleman et al., 2019). Empirical research on the classification of the latter four minorities was conducted. Building upon this work, the present study theoretically positioned disabled individuals as a potential competing group. Moreover, the findings provided support for the classification of homeless and disabled individuals as a competing group, while further supporting the categorization of dissident and deviant groups. This finding is important, as victims perceived similarly in terms of threat are likely to experience similar victimization patterns (Meuleman et al., 2019). Thus, identifying specific theoretical groups can contribute to a better understanding of the factors influencing the victimization of different minority groups.

The results of the confirmatory factor analysis suggested the presence of a factor that influences all types of hate crimes. This finding aligns with the generalized prejudice theory, which states that prejudice can extend across different targets (Allport, 1954). Thus, results indicate the need to test a bifactor model that incorporates an additional factor representing generalized prejudice. Such a model would allow for an investigation into the influences on hate crimes, distinguishing between factors associated with criminal behaviour and those targeting specific groups. However, the current sample lacked sufficient measures to explore this aspect. Future research could overcome this limitation by incorporating measurement variables allowing for a comprehensive examination of generalized prejudice.

The study found no association between changes in economic inequality and immigration and hate crimes, failing to confirm H2a and H3a. While an increase in inequality was associated with a decrease in hate crimes targeting minorities perceived as dissident and deviant groups, additional analysis showed no relationship. Previous research also found no consistent relationship between inequality and hate crimes (Green et al., 2001; Pridemore, 2011). Economic changes may shape coordinated collective action, but its influence on sporadic unorganized actions of small groups, such as hate crimes, is questionable (Green et al., 2001). Similarly, initially, increases in immigration were associated with a notable rise in hate crimes against competing and deviant groups. However, further analysis did not support this relationship. This lack of relationship was observed in previous studies (Benier et al., 2016; Rees et al., 2019; Seipel & Rippl, 2000). These findings suggest that the positive relationships found in US-based studies may not apply to other countries (Benier et al., 2016). Immigration

may not exceed the threshold that triggers hate crimes, or it could be seen as a societal value rather than activating symbolic threats. Moreover, Rees et al. (2019) found differences between West and East Germany, indicating a positive link between immigration and hate crimes in the East but no association in the West. This difference may be due to the significantly lower rate of foreigners in the East, which could impact the dynamics. Theoretically, these findings could be generalized across all states of West Germany, as the tested theories are not limited to Lower Saxony. However, the results should be empirically tested in other federal states, as the effects on hate crimes might differ.

Individual and collective deprivation were not found to moderate the relationships between hate crimes and structural factors, failing to confirm H2b and H3b. However, hate crimes were associated with deprivation feelings. Specifically, individual deprivation was associated with a slight increase in hate crimes targeting minorities perceived as deviant groups. This indicates that adolescents perceive a sense of competition, likely in terms of economic conditions and welfare provisions, with these specific minority groups. Additionally, collective deprivation was associated with a slight increase in hate crimes targeting foreigners. This suggests that adolescents consider the position of their ingroup, regardless of their individual deprivation. Thus, they may retaliate against those they consider responsible, such as foreigners, for the perceived unfair position of their ingroup.

The study also suggests that individual factors may be more influential than structural factors in explaining hate crimes. Consistent with prior research, females and students attending Gymnasium report lower levels of offending compared to males and students attending other school types. Additionally, adolescents with a migration background tend to report higher levels of offending compared to those without. Interestingly, adolescents identifying with a non-binary gender report higher levels of offending than their male peers. Two opposing theories can explain this relationship. Non-binary adolescents probably experience discrimination in their daily lives, resulting in anger, which may be directed towards other minorities as a way to express their frustration. Alternatively, adolescents may have indicated a different gender in the survey to support the availability of diverse gender options or for simple amusement. Thus, caution around these results is necessary, and further research is needed for conclusive insights.

The study revealed two further important aspects of hate crime offending. Firstly, it is noteworthy that hate crime incidence in Lower Saxony in 2019 was low, with only a small number of adolescents self-reporting any form of hate crime across counties. Thus, the hate crime measure was heavily skewed. In such cases, employing rare event modelling, specifically

designed for imbalanced datasets, could have been a more suitable approach to analyse low-incidence events (Leitgöb, 2020). Additionally, the hate crime measure captures incidence rather than prevalence. That is, the data did not consider the frequency or repetition of these crimes. Consequently, the actual number of hate crimes could potentially be higher than what was captured in the present study.

Secondly, the study found minimal variability in hate crimes across different counties, which prompts prior methodological discussions regarding the geographical design, that is the decision of the geographical scope employed. Although the current study did not observe variability in hate crimes at the county level, variations could exist at other levels, such as the neighbourhood. Research studies define communities very differently in terms of their narrowness or breadth, leading to methodological implications (Vogel & South, 2016; Vogel et al., 2021). On one hand, smaller geographic units are more likely to capture prominent events experienced by adolescents, particularly those occurring close to their residential areas, but may overlook important incidents taking place outside these boundaries. On the other hand, using larger geographical units overcomes this limitation but increases the risk of including irrelevant events. In the present study, it is plausible that specific neighbourhoods experienced a significant influx of immigrants, leading to hate crimes, but this was not captured at the county level. Therefore, future research could explore whether variations in hate crimes exist at different levels for this or other samples. However, researchers should ensure that the geographical design is guided by theoretical justifications.

Regarding the design of the study, there are three key elements for the choice of studying adolescents' self-reported hate crime, namely the age of the perpetrators, the method of data collection, and the focus on offenders. The adolescent years are crucial for understanding delinquency, as the age-crime curve indicates that criminal activity tends to peak around age 17 (Farrington, 1986). Consequently, valuable insights can be gained into hate crimes in general by analysing hate crimes among adolescents. Additionally, official crime data often underestimate hate crimes due to inaccuracies and incompleteness in police records, with approximately 60% of hate crimes going unreported (Benier et al., 2016; Hall, 2018; Levin, 1999). Self-report data, despite its limitations, such as potential discrepancies between self-reports by victims and offenders, help fill the gap in official data and provides a significant measure of hate crimes (Benier et al., 2016). Furthermore, while previous research has predominantly focused on victimology, studying offenders can shed light on the factors that drive adolescents to hate crime offending, weakening the perception of hate crimes as acts committed solely by extremely hateful individuals (Gerstenfield, 2018). These factors guided

the design of the current study, emphasizing the study of self-reported hate crime offending among adolescents and effectively contributing to addressing these issues.

The study design also incorporated innovative elements by including change variables, building upon recent research in the field of hate crime (Iwama, 2018; Kros et al., 2022; Scheuerman et al., 2020). Instead of solely examining inequality and immigration rates at the time of the survey, the study employed change measures to investigate the potential influence of changes in these rates over a four-year period on hate crime offending. Considering the dynamic nature of migration, it is essential to account for contextual variations. Future research should continue exploring the effects of changing structural factors on hate crimes. However, the design of these measures in the current study raises some issues. While overall inequality in Germany is increasing, the study revealed a decrease in inequality for most counties in Lower Saxony. This may be a temporary fluctuation captured for the specific timeframe examined. Had a different timeframe been utilized, it is possible that inequality in these counties would have shown an increase instead. Thus, studying different time frames could potentially yield different relationships between changes in structural conditions and hate crimes. Additionally, immigration was measured based on the total number of non-German individuals officially residing in the counties, without differentiating between ethnic groups, particularly non-White minorities. Since non-White minorities are more likely to trigger socioeconomic and symbolic threats in the majority group compared to White minorities, future studies need to incorporate a group-specific measure of immigration rates. Unfortunately, such data is currently unavailable in Germany's public data sources.

In conclusion, this study shows that minority groups perceived as similar in threat content can be classified into competing, dissident and deviant groups, based on the differentiated threat approach. Additionally, the analysis of hate crimes among adolescents in Lower Saxony in 2019 indicates that changes in economic inequality and immigration within counties have negligible associations with hate crimes targeting these minority groups. Furthermore, feelings of deprivation do not moderate the relationships between hate crimes and these structural factors. Instead, individual factors such as feelings of individual and collective relative deprivation, gender, migration background, and school type attended by adolescents emerge as more influential factors in explaining hate crimes than structural factors.

Data Availability Statement

The data and materials used for this study are available upon request to the Kriminologisches Forschungsinstitut Niedersachsen.

Ethics Statement

The current study reported analyses based on official and survey data. As per relevant institutional and national guidelines and regulations, ethics approval was not required. For the survey data used in the analyses, the informed consent of the participants was implied through survey completion. Participation in the survey was completely voluntary and anonymous, and participants were free to withdraw without facing any penalties.

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Appendix A

Multilevel Analysis

The Intraclass Correlation Coefficients calculated to determine the proportion of variance in hate crime attributable to the county are presented in Table A1. The highest ICC of 0.0042 suggests that 0.42% of the variance in hate crimes targeting homosexual people is attributable to the county in which the adolescent lives. For three types of hate crimes, the ICCs are zero. These results indicate that hate crimes, any type of it, do not vary by county. Results show that a multilevel analysis cannot be performed.

Table A1

Intraclass Correlation Coefficients (ICC) at County Level

Hate crime	ICC
Homeless	.0004
Disabled	.0000
Foreigner	.0013
Jew	.0000
Homosexual	.0042
Muslim	.0000

Note. Level 1, $N = 12136$. Level 2, $N = 43$.

Appendix B

Missing data

There was no missing data for any of the county variables, as they were imputed based on adolescents' county, and all were known. There was also no missing data for the variable Gymnasium. Table B1 shows the number and percentage of missingness for those variables that had missing data. All variables had less than 5% of missingness.

Table B1

Number and Percentage of Missingness

Variable	N missing	% missing
6 Hate crime measures	242	1.9%
Gender	35	0.3%
Migration background	274	2.2%
Individual relative deprivation	482	3.9%
Collective relative deprivation	420	3.4%

Six paired *t*-test, one for each type of hate crime, indicated that people who had missing data for individual relative deprivation scored significantly lower, all $p < .001$, in hate crimes than people who did not have missing data ($t_{\text{homeless}}(11676) = -0.03, p < .001, 95\% \text{ CI } [-0.04, -0.03]$; $t_{\text{disabled}}(11676) = -0.08, p < .001, 95\% \text{ CI } [-0.09, -0.07,]$; $t_{\text{foreign}}(11676) = -0.08, p < .001, 95\% \text{ CI } [-0.09, -0.07]$; $t_{\text{Jew}}(11676) = -0.02, p < .001, 95\% \text{ CI } [-0.03, -0.02]$; $t_{\text{homosexual}}(11676) = -0.07, p < .001, 95\% \text{ CI } [-0.07, -0.06]$; Muslim, $t_{\text{Muslim}}(11676) = -0.04, p < .001, 95\% \text{ CI } [-0.04, -0.03]$).

In the same way, six paired *t*-test indicated that people who had missing data for collective relative deprivation scored significantly lower (all $p < .001$) in hate crimes than people who did not have missing data ($t_{\text{homeless}}(11744) = -0.03, p < .001, 95\% \text{ CI } [-0.04, -0.03]$; $t_{\text{disabled}}(11744) = -0.08, p < .001, 95\% \text{ CI } [-0.09, -0.07]$; $t_{\text{foreign}}(11744) = -0.08, p < .001, 95\% \text{ CI } [-0.09, -0.07]$; $t_{\text{Jew}}(11744) = -0.02, p < .001, 95\% \text{ CI } [-0.03, -0.02]$; $t_{\text{homosexual}}(11744) = -0.07, p < .001, 95\% \text{ CI } [-0.07, -0.06]$; $t_{\text{Muslim}}(11744) = -0.04, p < .001, 95\% \text{ CI } [-0.04, -0.03]$).

Moreover, six anova tests for the variable gender were performed to assess if people who had missing data scored differently in hate crimes than those who did not ($F_{\text{homeless}}(1, 12134) = 0.369, p > .05$; $F_{\text{disabled}}(1, 12134) = 0.025, p > .05$; $F_{\text{foreign}}(1, 12134) = 0.037, p > .05$;

$F_{\text{Jew}}(1, 12134) = 0.261, p > .05$; $F_{\text{homosexual}}(1, 12134) = 0.87, p > .05$; $F_{\text{Muslim}}(1, 12134) = 0.422, p > .05$). Results showed that there was no evidence of a significant difference (all $p > .05$) in the means of the outcome variables for people who had missing data and those who had not.

Another six anova tests for the variable migration background were performed with the same goal for assessing the effects of missing data ($F_{\text{homeless}}(1, 12134) = 0.057, p > .05$; $F_{\text{disabled}}(1, 12134) = 0.059, p > .05$; $F_{\text{foreign}}(1, 12134) = 2.723, p > .05$; $F_{\text{Jew}}(1, 12134) = 0.683, p > .05$; $F_{\text{homosexual}}(1, 12134) = 4.151, p < .05$; $F_{\text{Muslim}}(1, 12134) = 0.244, p > .05$). In this case, people for which there was missing data related to whether they had a migration background or not only scored significantly different in hate crimes against homosexual people.

Appendix C

Sensitivity Analysis

Multiple Linear Regression for each type of hate crime

Results of the multiple linear regression (see Results section) are reproduced with six dependent variables, one for each hate crime. That is, instead of using the competent, dissident and deviant groups, the results are reported for hate crimes against homeless, disabled, foreigners, Jews, homosexual, and Muslim people. Only two of the six multiple linear regression models were found to be statistically significant (Table C1), as indicated by the *F*-statistic, namely the models for hate crimes targeting homeless and homosexual people. The other four models were found to be not statistically significant. The adjusted R^2 were extremely low. The models explained less than 1% of the variance in hate crimes against homeless and homosexual people.

Table C1

Model 1. Controlled by Type of Hate Crime

	Homeless		Disabled		Foreign		Jew		Homosexual		Muslim	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	0.01	0.01	0.05	0.01	0.07	0.01	0.02	0.01	0.02*	0.01	0.03	0.01
			***		***		**				**	
Change in GINI	-0.00	0.16	-0.45	0.28	-0.53	0.23	-0.26	0.13	-0.70	0.21	-0.18	0.17
					*		*		***			
Change in foreigners	1.00	0.40	1.00	0.69	-0.14	0.56	0.02	0.33	1.53	0.51	0.29	0.42
	*								**			
Model statistics												
R^2	.00036		.00024		.00029		.00016		.00154		.00003	
<i>F</i>	3.19*		2.45		2.75		1.99		10.38***		0.81	
<i>df</i>	2, 12133		2, 12133		2, 12133		2, 12133		2, 12133		2, 12133	

Note. $N = 12136$. * $p < .05$, ** $p < .01$, *** $p < .001$

When adding interactions (Table C2), five of the six multiple linear regression models were found to be statistically significant. Surprisingly, the previous significant model of hate crimes against homeless people was found not to be statistically significant when adding moderator variables. The adjusted R^2 remained extremely low. Finally, control variables were added to the models (Table C3). In this case, the six multiple linear regression models were found to be statistically significant. The adjusted R^2 increased slightly although remained really low.

Table C2

Model 2. Controlled by Type of Hate Crime

	Homeless		Disabled		Foreign		Jew		Homosexual		Muslim	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	-0.02	0.04	0.14	0.06	0.22	0.05	0.04	0.03	0.05	0.05	0.03	0.04
			*		***							
Change in GINI	-0.52	0.53	0.86	0.92	0.46	0.75	-0.54	0.43	-0.91	0.68	-0.68	0.56
Change in foreigners	1.64	1.59	-0.94	2.77	-3.54	2.26	-1.67	1.30	1.47	2.05	-0.04	1.70
Individual deprivation	0.01	0.01	0.00	0.01	-0.00	0.01	0.01	0.01	0.02	0.01	0.02	0.01
	*						*		*		*	
Collective deprivation	0.00	0.01	-0.02	0.02	-0.04	0.01	-0.01	0.01	-0.02	0.01	-0.01	0.01
					**							
GINI*Indiv	0.28	0.26	-0.67	0.46	-0.52	0.38	0.14	0.22	0.10	0.34	0.28	0.28
Foreign*Coll	-0.16	0.42	0.57	0.74	0.95	0.60	0.45	0.35	0.04	0.55	0.08	0.45
Model statistics												
R^2	.0005		.0010		.0027		.0007		.0040		.0007	
F	1.94		2.89**		6.18***		2.38*		8.73***		2.33*	
df	6, 11460		6, 11460		6, 11460		6, 11460		6, 11460		6, 11460	

Note. $N = 11467$. * $p < .05$, ** $p < .01$, *** $p < .001$

Table C3*Model 3. Controlled by Type of Hate Crime*

	Homeless		Disabled		Foreign		Jew		Homosexual		Muslim	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	-0.01	0.04	0.19	0.06	0.26	0.05	0.06	0.03	0.10	0.05	0.06	0.04
			**		***		*		*			
Change in GINI	-0.43	0.53	0.88	0.92	0.40	0.76	-0.54	0.43	-0.64	0.67	-0.81	0.56
Change in foreigners	1.50	1.60	-2.76	2.80	-4.19	2.29	-1.87	1.30	0.42	2.04	-0.11	1.71
Individual deprivation	0.01	0.01	-0.01	0.01	-0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Collective deprivation	0.00	0.01	-0.03	0.02	-0.04	0.01	-0.01	0.01	-0.02	0.01	-0.01	0.01
					**							
GINI*Indiv	0.22	0.27	-0.71	0.46	-0.47	0.38	0.14	0.22	-0.09	0.34	0.35	0.28
Foreign*Coll	-0.21	0.43	0.87	0.74	1.00	0.61	0.46	0.35	0.11	0.54	0.04	0.45
Gender (female)	-0.02	0.01	-0.04	0.01	-0.06	0.01	-0.03	0.00	-0.06	0.01	-0.05	0.01
	**		***		***		***		***		***	
Gender (other)	0.15	0.04	0.30	0.06	0.15	0.05	0.25	0.03	0.20	0.04	0.13	0.04
	***		***		**		***		***		***	
Gymnasium	-0.01	0.01	-0.03	0.01	-0.04	0.01	-0.01	0.01	-0.02	0.01	-0.00	0.01
	*		**		***				*			
Migration background	0.03	0.01	0.05	0.01	0.02	0.01	0.01	0.01	0.07	0.01	0.02	0.01
	***		***		*				***		*	
Model statistics												
R^2	.005		.007		.011		.012		.019		.007	
F	6.66***		9.51***		13.15***		14.15***		23.02***		9.00***	
df	10, 11293		10, 11293		10, 11293		10, 11293		10, 11293		10, 11293	

Note. $N = 11304$. * $p < .05$, ** $p < .01$, *** $p < .001$

Multiple Linear Regression controlling for initial levels of inequality and immigration

Results of the multiple linear regression (see Results section) are reproduced controlling for the GINI coefficient and the proportion of foreigners in 2015. Two of the three multiple linear

regression models were found to be statistically significant (Table C4), as indicated by the F -statistic, namely the models for hate crimes targeting competing and deviant groups. The adjusted R^2 were low.

Table C4

Model 1. Controlled by Initial Levels of Inequality and Immigration

	Competing		Dissident		Deviant	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	-0.08	0.11	0.17	0.09	-0.04	0.10
Change in GINI	-0.39	0.39	-0.93**	0.33	-0.83*	0.34
Change in foreigners	0.91	1.03	-0.20	0.87	1.11	0.89
Baseline GINI	0.46	0.42	-0.33	0.36	0.31	0.37
Baseline foreigners	0.50	0.26	0.03	0.22	0.33	0.22
Model statistics						
R^2	.0007		.0003		.0012	
F	3.14*		2.04		4.55**	
df	4, 12131		4, 12131		4, 12131	

Note. $N = 12136$. * $p < .05$, ** $p < .01$, *** $p < .001$

When adding interactions (Table C5), all three multiple linear regression models were found to be statistically significant. The adjusted R^2 increased slightly for all models, however, they all remained extremely low. Finally, control variables were added to the models (Table C6). In this case, the three multiple linear regression models were found to be statistically significant. Again, the adjusted R^2 increased slightly although remained low.

Table C5*Model 2. Controlled by Initial Levels of Inequality and Immigration*

	Competing		Dissident		Deviant	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	-0.02	0.14	0.37**	0.12	0.03	0.12
Change in GINI	0.34	1.15	-0.22	0.98	-1.63	0.99
Change in foreigners	-0.59	3.49	-5.08	2.96	0.64	3.01
Individual deprivation	0.01	0.01	0.01	0.01	0.04**	0.01
Collective deprivation	-0.02	0.02	-0.05**	0.02	-0.03	0.02
Baseline GINI	0.45	0.44	-0.44	0.38	0.16	0.38
Baseline foreigners	0.52	0.27	-0.00	0.23	0.33	0.23
GINI*Ind dep	-0.37	0.57	-0.40	0.48	0.40	0.49
Foreigners*Coll dep	0.46	0.92	1.36	0.78	0.13	0.79
Model statistics						
<i>R</i> ²	.001		.003		.004	
<i>F</i>	2.89**		4.78***		6.36***	
<i>df</i>	8, 11458		8, 11458		8, 11458	

Note. *N* = 11467. **p* < .05, ***p* < .01, ****p* < .001

Table C6*Model 3. Controlled by Initial Levels of Inequality and Immigration*

	Competing		Dissident		Deviant	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Intercept	0.09	0.14	0.47***	0.12	0.17	0.12
Change in GINI	0.43	1.16	-0.31	0.98	-1.48	0.99
Change in foreigners	-2.16	3.52	-5.72	2.99	0.15	3.01
Individual deprivation	0.00	0.01	0.01	0.01	0.02	0.01
Collective deprivation	-0.02	0.02	-0.05**	0.02	-0.03	0.02
Baseline GINI	0.28	0.45	-0.57	0.38	-0.04	0.38
Baseline foreigners	0.38	0.27	-0.10	0.23	0.08	0.23
GINI*Ind dep	-0.46	0.58	-0.36	0.49	0.26	0.49
Foreigners*Coll dep	0.68	0.92	1.42	0.78	0.15	0.85
Gender (female)	-0.06***	0.01	-0.09***	0.01	-0.11***	0.01
Gender (other)	0.45***	0.08	0.40***	0.06	0.34***	0.07
Gymnasium (Yes)	-0.04**	0.01	-0.05***	0.01	-0.02	0.01
Migration backg. (Yes)	0.08***	0.01	0.03*	0.01	0.09***	0.01
Model statistics						
<i>R</i> ²	.01		.02		.02	
<i>F</i>	10.96***		15.39***		20.05***	
<i>df</i>	12, 11291		12, 11291		12, 11291	

Note. *N* = 11304. **p* < .05, ***p* < .01, ****p* < .001

Appendix D

Assumption Check

When performing multiple linear regression, several statistical assumptions need to be satisfied for the validity and reliability of the regression model. These assumptions are independence of observations, normal distribution, linearity, no multicollinearity, and homoscedasticity. The assumption of independent observations was violated. The observations of economic inequality and immigration are at the county level ($N = 43$); thus, the data has a multilevel format. This implies that observations within counties are dependent. However, a ICC indicated that there was no variation of hate crimes attributable to the county and that a multilevel analysis, which would have taken into account this dependency between the data, could not be performed (see Appendix A).

The assumption of normal distribution of the variables was partially violated. The dependent variable is very skewed to the right. However, this is due to the nature of the variable. That is, most people do not commit hate crimes (Figure D1). The variable of economic inequality, as measured by changes in the GINI coefficient, follows a more or less normal distribution (Figure D2). The variable of immigration, measured by changes in the proportion of foreigners, is slightly skewed to the right (Figure D3). Thus, the two independent variables of interest do not violate the assumption of normal distribution.

Figure D1

Distribution of Hate Crimes

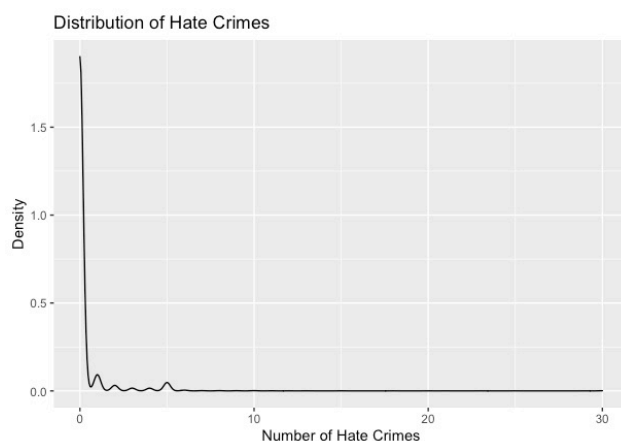
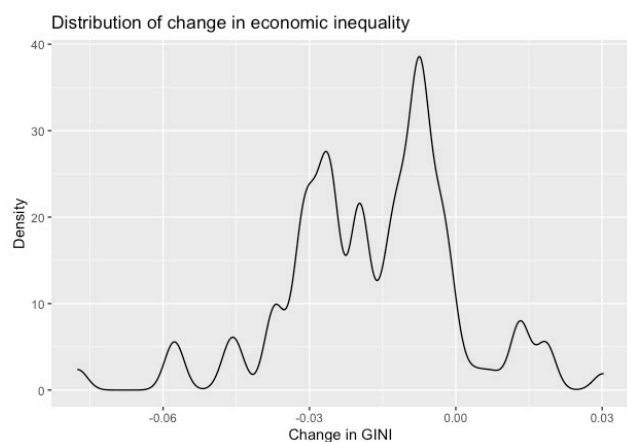
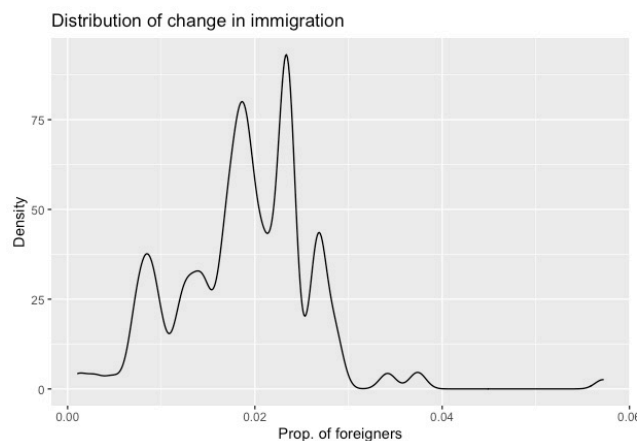
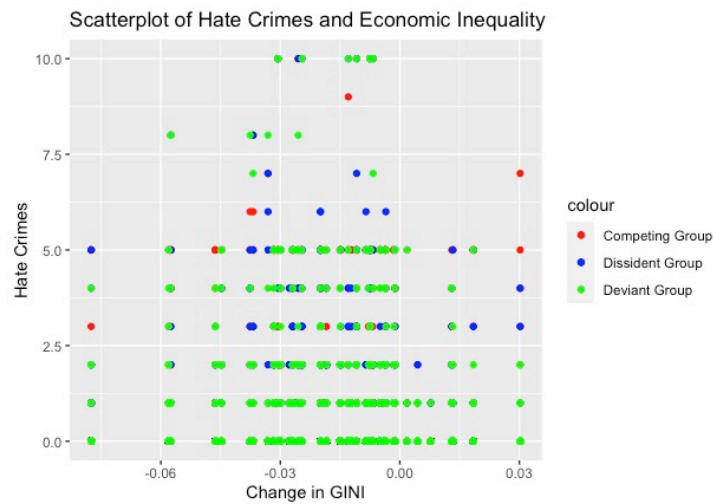


Figure D2*Distribution of Economic Inequality***Figure D3***Distribution of Change in Immigration*

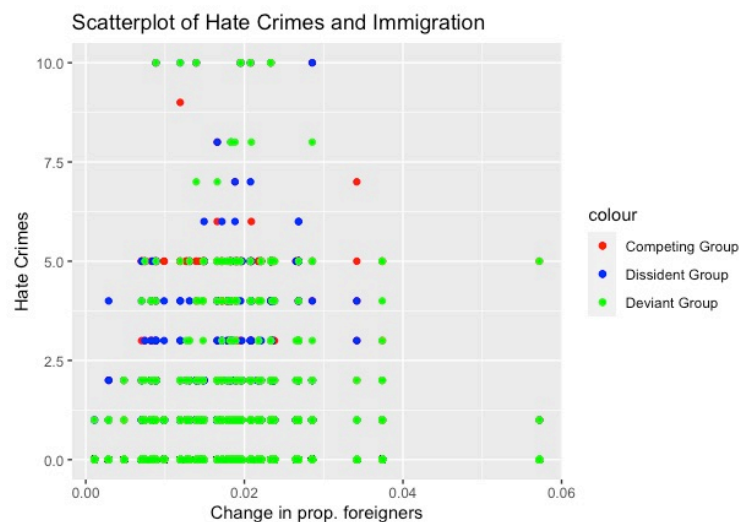
Scatterplots between the three dependent variables (i.e., hate crimes targeting competing, dissident and deviant groups) and the two independent variables (i.e., changes in economic inequality and immigration) did not indicate a linear relationship between any of the three dependent variables and the predictor variables (Figure D4 and Figure D5). Thus, also violating the linearity assumption. This suggests that a weak or no relationship between the independent and the dependent variable might be found. The results did show that the assumption of no multicollinearity between the two independent variables was met, as they were found to not be highly correlated ($r(12376) = -.04, p < .001$).

Figure D4

Scatterplot showing the relationship between economic inequality and hate crimes

**Figure D5**

Scatterplot showing the relationship between immigration and hate crimes



The assumption of homoscedasticity was not violated by the models examining competing and dissident groups, but there was evidence of heteroscedasticity for the model examining deviant groups. Thus, violating the homoscedasticity assumption. The Scale-Location plot for the three models showed the spread of residuals to be roughly equal at all fitted values, that is, visually the line is more or less horizontal (Figures D6, D7, and D8). Furthermore, the Breusch-Pagan test indicates that for competing and dissident groups there is

