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Direct Experience, Temporary Fear: How Victimization Shapes Precautionary Behavior

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Direct Experience, Temporary Fear: How Victimization Shapes Precautionary Behavior*

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Abstract

This paper examines how direct and indirect victimization affect cognitive, affective, and conative dimensions of fear of crime. Using five waves of a German panel dataset (2022–2024), we estimate difference-in-differences and event study models with staggered treatment timing. Direct victimization leads to persistent increases in cognitive (perceived risk) and affective (emotional) fear. In contrast, avoidance behavior rises only temporarily and fades within subsequent waves. Indirect victimization generates smaller and short-lived responses, primarily in precautionary behavior. Heterogeneity analyses show stronger and more persistent effects among highly educated individuals, while gender and income differences are less consistent. We find no evidence of pre-trends or treatment-induced attrition. Overall, the results suggest that personal victimization durably alters internal risk perceptions and emotional responses, whereas behavioral adaptations are short-lived.

Keywords: fear of crime, perceived risk, avoidance behaviors

JEL: D91

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1 Introduction

Fear is not just a background emotion, but rather a powerful force which shapes how people act in everyday life. This is even more relevant and evident in the context of fear of crime, where the threat may be personal and immediate. When individuals feel unsafe, they do not remain passive, but adjust by taking longer routes home, avoiding certain neighborhoods, install alarms, carry defensive tools such as firearms, or even in some cases completely withdraw from public life. While these choices may reduce their fear of crime, they are not costless. Safety has a price: more time, more money, and sometimes even diminished health. Hence, fear does not only reflect the risk of crime, it may actively restructure daily life.

Earlier studies have shown that people respond not only to the actual level of crime but also to the intensity of criminal offenses, their representation in the media, and public discourse (Suzuki et al., 2025; Hipp, 2013; Duffy et al., 2008; Zimring and Hawkins, 1997). Because of these responses, some criminal acts evoke more fear than others and individuals may be incentivized to adapt their behavior in order to prevent becoming victims.

Scholars highlight that violent offenses generate stronger feelings of fear than minor property crimes (Hipp, 2013; Garofalo, 1981), although other work identifies burglaries or robberies as important drivers of fear as well (Suzuki et al., 2025; Skogan and Maxfield, 1981). Personal traits also shape fear. For example, women and older adults tend to report higher levels of fear, which has been interpreted as a reflection of perceived vulnerability (Rader et al., 2012; Ferraro, 1995). In addition, socioeconomic status, education, and health shape the feeling of insecurity in daily life (Rader and Cossman, 2011; Vilalta, 2011). A small subset of literature discussed that minority members or individuals from lower classes exhibit higher levels of fear of crime, since their social standing increases their victimization potential (Rader et al., 2012; Scarborough et al., 2010; Skogan and Maxfield, 1981). For instance, Scarborough et al. (2010) showed that higher education is associated with lower levels of fear of crime in the USA.

Our study builds on this literature by examining how direct and indirect victimization impact three forms of fear. These are cognitive fear, affective fear, and conative fear (avoidance behavior). Victimization in this context means the self-reported information whether an individual has fallen victim to a crime sometime in their life. Direct victimization would hence describe the first-hand experience of being a victim, whereas indirect victimization implies being very close to someone who was victim of a crime.

We use a panel dataset from Germany that follows individuals across five waves (Wagner et al., 2024). This allows us to observe how fear changes immediately after victimization and whether these changes are temporary or persistent. We analyze these dynamics using difference-in-differences and an event study design, as described in Sun and Abraham (2021). Furthermore, since certain social groups may be disproportionately affected by victimization and may react differently to victimization, we conduct heterogeneity analyses to examine the impact on these groups.

Our contribution to the literature is twofold. First, we expand the existing discourse on perceived crime and fear of crime by explicitly linking it to avoidance and defensive behaviors of victimized individuals. Second, we provide a causal analysis using a novel panel dataset from Germany, allowing us to track individuals' behavioral responses over time. This enables us to examine whether and how avoidance measures diminish as time passes following an initial victimization event.

The estimates show that direct victimization produces clear increases in cognitive and affective fear. These increases remain visible long after the event has occurred. Conative fear (avoidance behavior) also rises, but only for a short time. We also find that indirect victimization produces smaller and short-lived reactions. These findings contribute to the broader literature on fear of crime by documenting how personal experience shapes different forms of fear within a short period of time.

The paper is structured as follows: Section 2 provides an overview of the literature regarding the fear of crime. Section 3 describes the data, our approach, and identification strategy. In Section 4, we present the results of our difference-in-differences and event study specifications alongside our heterogeneity analyses. Section 5 provides a critical assessment of our approach and provides an outlook for further research, whereas Section 6 concludes.

2 Related Literature

2.1 Fear of Crime

Zimring and Hawkins (1997) argue that violent crime in a neighborhood strongly shapes how people perceive crime, resulting in higher levels of fear in more violent neighborhoods. Thereby, severe and violent crimes tend to evoke more fear than petty crimes (Garofalo, 1981; Hipp, 2013). In contrast, Skogan and Maxfield (1981) and Suzuki et al. (2025) suggest

that property crimes, such as burglaries or robberies, are the primary drivers of fear of crime, rather than violent crime. According to Camacho Doyle et al. (2022), robberies and other violent crimes are related to perceived safety and fear of crime, with robbery being the only offense linked to avoidance behavior. Building on these findings, we explicitly distinguish between different categories of violent offenses to examine potential heterogeneity in responses. Following Rountree and Land (1996), we distinguish between fear of crime as an affective response to potential victimization and perceived risk as a cognitive assessment of crime likelihood.[1]

According to Valera and Guàrdia (2014), fear of crime is related to environmental features, personal characteristics, and social representation of unsafe places. Ferraro (1995) analyzed personal characteristics associated with fear of crime and found that gender is a stronger predictor than age. For instance, women reported higher levels of fear of crime compared to men. However, this heightened fear appears to be driven by their underlying fear about sexual victimization, as women statistically tend to get raped more often than men (Ferraro, 1995). In addition to gender differences, empirical evidence suggests that individuals in poor health and older adults also exhibit higher levels of fear of crime, likely due to their limited ability to defend themselves in case of victimization, thus reflecting a form of physical vulnerability (Rader et al., 2012; Vilalta, 2011). Moreover, factors such as socioeconomic status and race have been identified as salient drivers of fear of crime, capturing dimensions of social vulnerability (Rader et al., 2012; Rader and Cossman, 2011). Finally, political factors, including confidence in the government and perceived governmental performance, have been shown to significantly reduce the fear of crime (Lin, 2023). In light of these findings, we account for individual characteristics that may influence fear of crime and explore group-specific effects by conducting separate analyses for men and women, educational attainment, income, and region of living.

2.2 Avoidance & Defensive Measures

Perceived fear is an important determinant of human behavior, especially in the context of crime. Fearful people may employ avoidance or defensive behavioral patterns to avoid victimization, thus creating additional economic costs for themselves in the form of extra travel time to get to their destination or in monetary terms. Increased costs may also manifest themselves as poorer health outcomes. Avoidance behaviors involve limiting one's activities or mobility to minimize exposure to crime, whereas defensive behaviors refer to

[1]For an overview of how fear of crime was measured in the past, see Hart et al. (2022).

actions taken to increase personal security actively. Examples of avoidance behaviors include refraining from exercising at night, leaving the house only when necessary, staying away from certain areas of towns or cities, and not using public transport during nighttime hours (Rader et al., 2007; Vilalta, 2011). In contrast, defensive behaviors encompass measures such as installing security lighting, adding extra door locks, purchasing firearms (in the US context), acquiring guard dogs, or installing alarm systems (Rader et al., 2007).

Empirical evidence from the United States indicates that prior victims of violent or sexual crimes and those with higher levels of fear are significantly more likely to adopt avoidance behavior than their counterparts (Rader et al., 2007; Hibdon et al., 2016). The same logic applies to women, individuals with lower income, and those with less education (ibid.). In addition, Zimmerman and Posick (2016) find that American youths with low perceived ability to avoid neighborhood violence were more likely to be exposed to crime.

At the intersection of transport and crime research, studies from Mexico and the United Kingdom demonstrate that individuals with higher levels of fear about crime tend to modify their travel behavior and thus avoid potential victimization (Borja et al., 2024; Heinen, 2023; Vilalta, 2011).

3 Empirical Strategy

3.1 Data

We use the PaWaKS (Panel on the Perception of Crime and Offenders, Version 5)[2], a panel dataset for Germany that spans the period from early 2022 to early 2024 in 5 waves (Wagner et al., 2024). Ipsos conducted this longitudinal survey between March 2022 and April 2024. The baseline survey, conducted from March 23 to April 14, 2022, included 5,174 respondents representative of the German adult population in terms of gender, age, education, and region. Follow-up interviews were conducted approximately every six months, with 2,654 participants in the second wave (September–October 2022), 1,925 in the third wave (March–April 2023), 1,134 in the fourth wave (September–October 2023), and 581 in the fifth wave (March–April 2024). The gradual reduction in sample size reflects typical panel attrition, which was mitigated through targeted retention efforts, including personalized invitations and reminder communications.

[2]This project is partially funded by taxes that are provided on basis of the budget passed by the Saxon State Parliament.

Our primary analysis focuses on the 581 individuals aged 18–65 who completed all five waves (about 11 percent of the original sample). This balanced sample remains broadly representative of the German adult population. The analyses are limited to these individuals to ensure comparability across waves and to avoid issues related to missing data. In robustness analyses, we lift this restriction and allow for all individuals to be included in our models regardless in how many waves they participated. Additionally, we also use inverse probability weighing to account for panel attrition.

We consider several outcome measures. Fear of crime is measured along three complementary dimensions capturing emotional reactions, perceived risk, and behavioral consequences of crime-related fear. Affective fear measures how often respondents felt afraid of different offenses during the past year. Cognitive fear captures respondents' perceived likelihood of becoming a victim of these offenses within the following year. Conative fear reflects behavioral adaptations that indicate whether fear of crime limits daily activities, for example, by avoiding certain places or refraining from going out at night. The affective and cognitive measures each include nine items covering property crimes, physical and sexual assaults, discrimination-related attacks, digital identity theft, and police violence. The conative dimension comprises four items that capture avoidance and precautionary behavior. All items are rated on seven-point scales ranging from 1 (never or very unlikely) to 7 (always or very likely), with higher values indicating greater fear or stronger behavioral avoidance. For each dimension, an index is constructed by averaging the respective items. The exact survey questions, items, and measurements for each outcome are summarized in Table 1.

Table 1: Outcome Variables

Outcome	**Survey Question**	**Items**	**Measurement**
Cognitive Fear	How likely do you think it is that one of the following crimes will happen to you in the next year?	• Home burglary • Getting robbed • Physical assault • Sexual assault or rape • Physical/verbal attack based on skin color, ethnicity or religion • Physical/verbal attack based on sexual orientation • Physical/verbal attack based on migration background or nationality • Digital identity theft • Police violence	Average score from 1 (very unlikely) to 7 (very likely) across all items
Conative Fear	Please think about whether the fear of crime limits your activities in your everyday life. To what extent do the following statements apply to you?	• Avoiding certain places, streets or parks • Avoiding strangers in the dark if possible • Not leaving the house after dark unless necessary • Avoiding using public transport at night	Average score from 1 (very unlikely) to 7 (very likely) across all items
Affective Fear	For the following offenses, please indicate how often you were afraid of them in the past year. In the past year, I have been afraid ...	• same items as for Cognitive fear	Average score from 1 (very unlikely) to 7 (very likely) across all items

We define treatment based on self-reported experiences of victimization. Respondents were asked whether a series of offenses had ever happened to them personally or to someone they know well (see Table 2). The list includes domestic burglary, robbery, assault, sexual

violence, discrimination-related violence, digital identity theft, and police violence. The response options distinguish between direct victimization, when the event occurred to the respondent, and indirect victimization, when the event occurred to someone close to the respondent.

Table 2: Treatment Variable

Treatment	**Survey Question**	**Items**	**Measurement**
Direct Victimization	The following are different types of crimes. In each case, please indicate which of these have already happened to you or someone you know well. (Note: If neither applies, please leave the line blank.)	• Same items as for Cognitive fear in Table 1	1 if individual reports being a victim of crime, 0 otherwise

As not all respondents provided complete information on every outcome, sample sizes vary across specifications. Table 3 shows summary statistics of the main variables in our primary specification, sorted by whether the individuals experienced direct victimization in any of the potential crimes captured by the data (treatment) and those who did not. The treatment group includes individuals who were victimized sometime after the first survey wave. That way, individuals who are always treated are excluded from the analysis. The control group only includes individuals who have never experienced any form of victimization.

Table 3: Descriptive Statistics

Treated	Obs.	Mean	SD	Min	Max
Cognitive Fear	565	2.072	0.870	1.000	6.000
Conative Fear	553	4.131	1.788	1.000	7.000
Affective Fear	555	1.999	0.817	1.000	5.780
Control					
Cognitive Fear	1290	1.905	0.732	1.000	6.000
Conative Fear	1225	3.921	1.700	1.000	7.000
Affective Fear	1275	1.833	0.719	1.000	5.220

3.2 Method & Identification

We estimate a standard difference-in-differences setup with staggered treatment adoption, individual (μ_i) and time fixed effects (λ_t), and with standard errors clustered at the individual level:

$$Y_{it} = \beta D_{it} + \gamma X'_{it} + \mu_i + \lambda_t + \varepsilon_{it}\,, \tag{1}$$

where Y_{it} denotes the level of fear of individual i and wave t. D_{it} is a dummy variable that takes the value of 1 when the individual experiences victimization for the first time and zero otherwise. We run separate regressions for each fear measure. The coefficient β is our difference-in-differences estimate of interest (see Table 3). ε_{it} denotes the error term.

In additional specifications in the Appendices, we distinguish between indirect and direct victimization and use interactions to account for potential differences in effects based on sociodemographic characteristics, such as gender, income, and education.

Expanding on equation (1), we can rewrite it using the adapted notation from Freyaldenhoven et al. (2021) to obtain wave-specific estimates for the treated cohort following the event study specification by Sun and Abraham (2021), which allows for a staggered treatment design:

$$Y_{it} = \sum_{m=-G}^{M} \beta_{m,t^*(i)} z_{i,t-m} + X_{it}^{'}\psi + \mu_i + \lambda_t + \varepsilon_{it} \tag{2}$$

where Y_{it} again denotes the level of fear of an individual i at wave t, and μ_i and λ_t are the individual and time fixed effects respectively. The term $\sum_{m=-G}^{M} \beta_{m,t^*(i)} z_{i,t-m}$ denotes that the treatment may have dynamic effects. The coefficients $\beta_{m,t^*(i)}$ represent the dynamic treatment effect for a cohort at a relative time, and $z_{i,t-m}$ is the treatment indicator at time $t-m$. In our staggered treatment setting, $t^*(i)$ represents the time an individual first becomes victimized, i.e., the binary treatment indicator at a given point in time. The outcome Y_{it} at a given time t can only be directly affected by the value of the policy at most $M \geq 0$ periods before t and at most $G \geq 0$ periods after t (Freyaldenhoven et al., 2021).

Per our setup, the period at time -1 denotes the last period before an observed individual experiences direct victimization and is normalized to zero. In this specification, Sun and Abraham (2021) established that without controls and confounders, and with a never-treated

group, the estimates are valid, proper weighted average estimates of the individual unit-specific treatment effects in their respective group (Freyaldenhoven et al., 2021).

Our identification relies on the assumption that victims would have followed the same trend as never-victimized individuals in the absence of victimization. The treated group consists of individuals who reported at least one incident of direct victimization that occurred in any wave, excluding the first wave (which includes all treated individuals). Once respondents reported a direct victimization, they remained coded as treated in all subsequent waves. The control group consists of respondents who have never reported any victimization experience. The exclusion of always-treated individuals, i.e., those who were victimized in the first wave, ensures a clean comparison between the two groups while also allowing for testing for any potential pre-existing trends between the two groups.

4 Results

4.1 Static Model: Difference-in-Differences

Table 4 reports the complete set of results for different outcomes and treatment definitions. We first present estimates from the main specification. Across all specifications, direct victimization increases cognitive fear by about 0.2 points when compared to the control group. This finding is consistent with our expectations and aligns with previous research on the link between personal experiences and fear of crime.

The magnitude of the treatment effects varies slightly across outcomes. However, standardized estimates reveal a clear pattern. Cognitive and affective fear increase by roughly 10 and 9 percent respectively. Victims, therefore, think about crime more often and report stronger emotional fear reactions than individuals who have never experienced victimization. The effect on the conative dimension of fear is about half as large. An increase of 5 percent in conative fear suggests that victimization generates some behavioral adjustments, although not all fearful reactions translate into precautionary measures or avoidance. Taken together, these results point to a consistent pattern. Direct victimization heightens personal fear and insecurity.

Reverse causality does not pose a credible threat to identification. It is doubtful that individuals intentionally expose themselves to victimization. It is also unlikely that people with higher levels of fear are more prone to becoming victims. The temporal ordering of events supports the claim that victimization precedes changes in fear rather than the reverse.

Table 4: Difference-in-Differences Estimation Results

	Cognitive Fear	Conative Fear	Affective Fear
ATET	0.191***	0.206**	0.164***
	(0.062)	(0.102)	(0.060)
Constant	1.956***	4.004***	1.916***
	(0.027)	(0.045)	(0.026)
Effect Size in %	9.765	5.167	8.705
Outcome Mean	1.956	3.987	1.884
Individual FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
R-squared	0.707	0.838	0.728
Obs.	1855	1778	1830

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the difference-in-differences specifications. For each outcome, we estimated the effect using a treatment indicator that identifies individuals based on their self-reported victimization in any period. Treatment group: individuals directly victimized in any time period. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

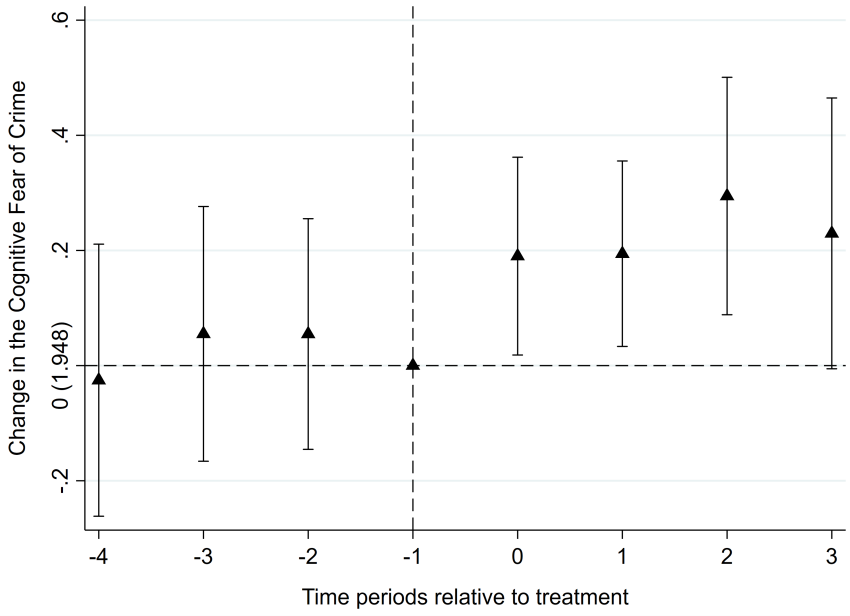
4.2 Dynamic Model: Event Study

We next examine the temporal dynamics of these effects using the Sun and Abraham (2021) event study framework. Figure 1 presents the dynamic effects for cognitive fear. We compare treated individuals to those who are never treated and find a clear increase in cognitive fear immediately after victimization. The effect remains statistically significant throughout the post-treatment periods.

Our specification shows strong internal validity. Pre-treatment trends are statistically indistinguishable from zero, which supports the parallel trends assumption. Post-treatment coefficients show no signs of attenuation. The impact of victimization on cognitive fear,

therefore, remains robust and persistent.

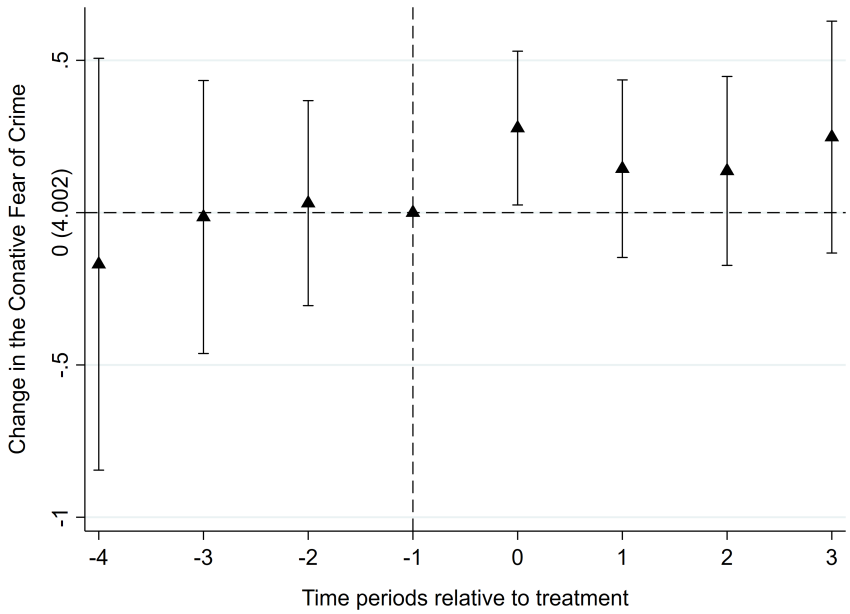
Figure 1: Cognitive Fear of Crime Event Study Results



Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

Figure 2 displays the results for conative fear or avoidance behavior. The pre-treatment periods show no systematic differences between treatment and control groups. In the post-treatment periods, we observe a rise in defensive behavior directly after victimization. However, this effect attenuates in subsequent waves and is no longer statistically distinguishable from zero. Individuals appear to adopt precautionary behavior only briefly after being victimized. They then return to their usual behavioral patterns, possibly because fear becomes internalized rather than expressed through action.

Figure 2: Conative Fear of Crime Event Study Results

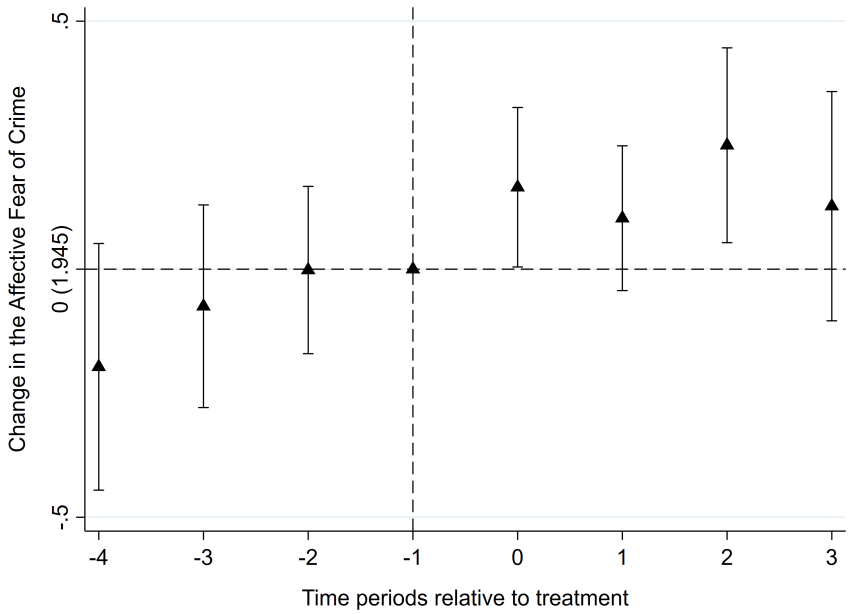


Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

Next, we study the affective dimension of fear, which captures worry about being victimized in the past year. Figure 3 summarizes the results and shows no evidence of pre-trends. Post-treatment trajectories reveal a persistent increase in affective fear. The effect does not diminish and remains visible even one and a half years after the triggering event (3 periods). Victimization, therefore, seems to have a lasting emotional impact that does not fade quickly.

The affective dimension of crime, meaning the fear of being victimized in the past year, yields results summarized in Figure 3. We found no statistical evidence of apparent pre-trends (p-value 0.40). Additionally, the effects do not appear to level off over time, as further supported by our post-trend leveling off tests (p-value 0.34). This points to a persistent temporal effect which not only extends beyond the immediate treatment period but also implies that the affective element of fear of crime does not diminish over time. After becoming victimized, individuals seemingly report a higher affective fear of crime even 1.5 years (about 3 periods post-treatment) after the initial victimization took place.

Figure 3: Affective Fear of Crime Event Study Results



Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

Taken together, the dynamic analysis reveals a clear distinction: internal dimensions of fear (cognitive and affective) show persistent increases, whereas behavioral responses (conative) are short-lived.

4.3 Robustness

In the next step, we expand our initial dataset by including all individuals, regardless whether they have been present in the data in all five periods[3]. This allows us to increase the statistical power and check whether the effects remain persistent even in this scenario. Overall, the main conclusions remain robust, although magnitudes are smaller in the unrestricted sample.

The static difference-in-differences estimates are found in Table 5. The results are smaller compared to our main sample. The effect of victimization on fear, albeit still statistically significant in the cognitive and affective dimension, is about half as potent when expressed

[3]Descriptive statistics for the full sample can be found in the Appendices

in percentages. Interestingly, we do not observe higher levels of conative fear of victimized individuals compared to their never-victimized counterparts in the static model which may indicate that people do not react to the immediate victimization by altering their behavior as one might expect.

Table 5: Difference-in-Differences Estimation Results (Unrestricted Sample)

	Cognitive Fear	Conative Fear	Affective Fear
ATET	0.109**	0.087	0.085*
	(0.046)	(0.069)	(0.044)
Constant	2.075***	4.068***	2.091***
	(0.012)	(0.020)	(0.012)
Effect Size in %	5.266	2.126	4.144
Outcome Mean	2.070	4.092	2.051
Individual FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
R-squared	0.822	0.872	0.827
Obs.	6943	6920	6892

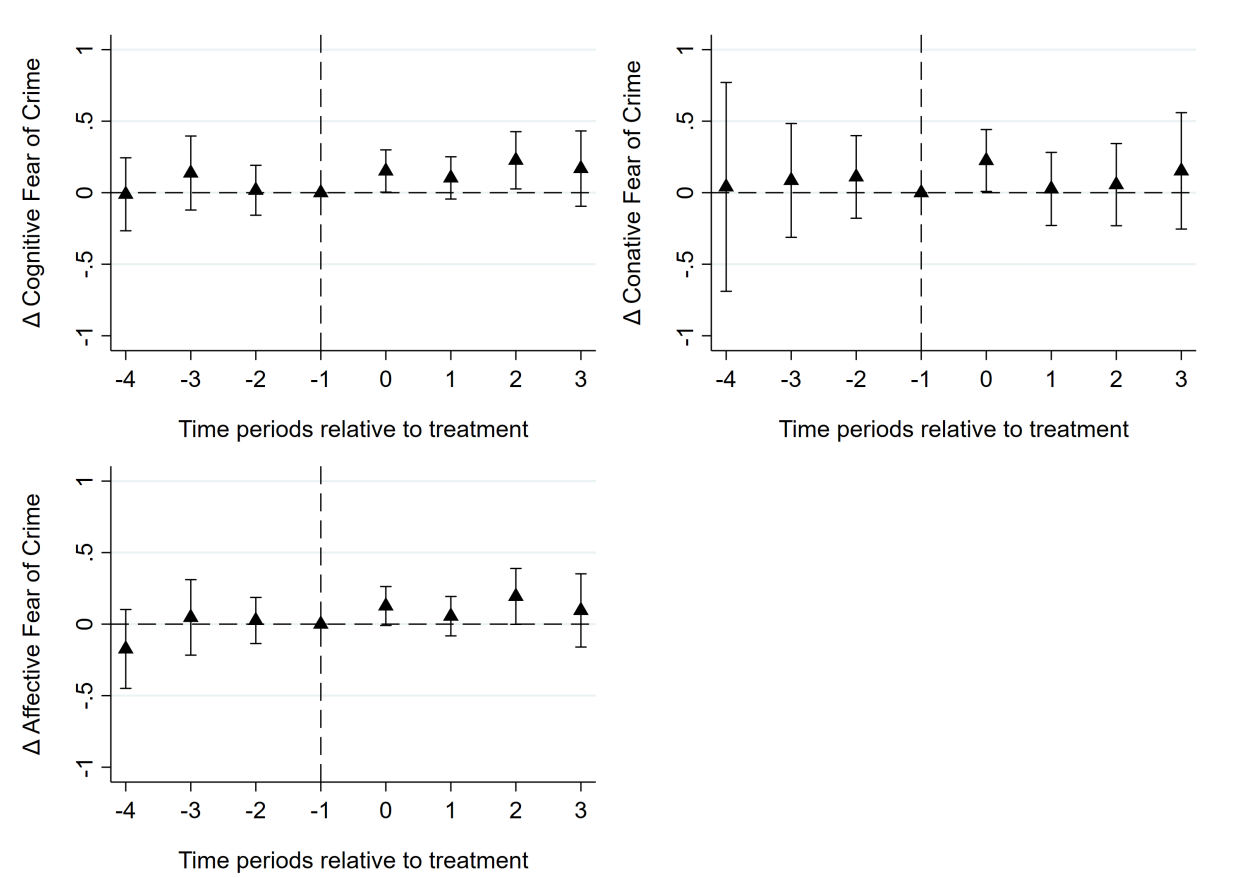
Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the difference-in-differences specifications for each outcome variable. We estimated the effect using a treatment indicator that identifies individuals based on their self-reported victimization in any period. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

Dynamic event study results (Figure 4) confirm these findings. The results for cognitive fear highlight a positive and statistically significant effect in the immediate post-treatment period, much like in our initial specification (top left). In the subsequent periods, the effect magnitude varies, yet our leveling off analysis shows that the effects remain persistent over time. Furthermore, we find no evidence of pre-trends (p-value 0.68). Overall, the effect is less pronounced compared to our initial restricted sample.

Figure 4: Dimensions of Fear of Crime: Unrestricted Sample



Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

In the conative dimension of fear, we also observe a statistically significant and positive spike following victimization (top right). This is in line with the results found in the restricted sample wherein individuals adapted their behavior and utilized preventive measures in the period immediately following the victimization event. Afterwards, however, the effect seems to vanish, possibly once again reflecting internalization behavior. As before, we find no evidence of pre-trends (p-value 0.89).

The event study results for the affective dimension of fear of crime displays weak statistically significant effects in the first period post victimization and no significant effects afterwards (bottom left). Compared to the main specification, the results are largely similar, albeit somewhat smaller. While we find no evidence of pre-trends or leveling off effects (p-values

0.43 and 0.49 respectively), the effect size in the post-treatment period is nevertheless still visibly larger than in periods preceding the treatment.

4.4 Heterogeneity

To further assess the validity of our findings, we estimate a range of alternative specifications, interacting our treatment variable with gender, education, and income. Additionally, we perform inverted probability weighting, thus accounting for panel attrition. Moreover, we also look at whether an effect is observable if we change our treatment variable from direct victimization to indirect victimization, thereby accounting for any contagion effects from directly knowing someone who has fallen victim to a crime. Additional difference-in-difference estimates are reported in the Additional Heterogeneity Analyses section of the Appendices.

We first assess whether pre-treatment characteristics predict selection into victimization. A logit model including gender, education, income, and settlement size yields a pseudo R-squared of 0.005. With the exception of residence in cities with more than 100,000 inhabitants, none of the covariates significantly predict treatment status. These findings suggest that victimization in our sample is largely unrelated to observable baseline characteristics.

4.4.1 Socio-Demographic Differences

The increase in cognitive fear is observed for both men and women and across income groups, with no consistent differences in magnitude across specifications. Effects on avoidance behavior (conative fear) remain weak and short-lived in all groups. These findings suggest that the main dynamic pattern, persistent internal fear but temporary behavioral response, is not driven by specific demographic groups.

Educational attainment exhibits a more systematic pattern. Highly educated individuals show stronger and more persistent increases in cognitive and conative fear. This pattern suggests that victimization may lead to more pronounced belief updating or risk reassessment among individuals with higher education levels. The dynamic estimates confirm that these effects remain visible across several post-treatment periods.

4.4.2 Inverse Probability Weighting & Attrition

To address selective panel attrition in the balanced specification, we construct inverse probability weights based on a logit model predicting participation in all five waves conditional on baseline characteristics (gender, education, income, settlement size, and region).

To further assess whether attrition is related to treatment exposure, we estimate a dynamic survival model at the individual-period level in which continued participation is regressed on treatment status and baseline covariates (Table B.13). The treatment coefficient is small and statistically insignificant, indicating no evidence of treatment-induced attrition.

Weighted and unweighted estimates are substantively similar (Table B.14, Figure B.10), suggesting that selective attrition is unlikely to bias the main results.

4.4.3 Indirect Victimization

We next redefine treatment as indirect victimization, defined as knowing someone close who has been a victim of crime. In the static specification (Table B.15), indirect victimization does not significantly affect cognitive fear. We observe modest positive effects in the conative dimension and significant effects in the affective dimension.

Event study estimates (Figure B.11) indicate that these responses are generally short-lived. Cognitive fear shows only small and mostly insignificant changes around treatment. Avoidance behavior (conative fear) increases temporarily but returns to baseline in subsequent periods. Affective fear does not exhibit persistent shifts.

Taken together, the results indicate that indirect victimization shapes certain dimensions of fear of crime, especially those related to preventive behavior. The effects are present mainly in the short run and tend to dissipate over time. This pattern suggests that proximity to a victim can activate fear and defensive behavior, yet these responses are not persistently reinforced in the absence of further exposure.

4.4.4 Direct & Indirect Victimization

Finally, we expand the treatment definition to include all individuals who were either directly or indirectly victimized in any period after the first wave. This broader specification classifies respondents with any personal or relational exposure to crime as treated, while the control group consists exclusively of individuals who never experienced victimization in any form.

Results from the static model (Table B.16) show that, when taken together, direct and indirect victimization significantly increase fear of crime across all three dimensions.

Event study estimates displayed in Figure B.12 suggest that these effects are most pronounced in the periods immediately following victimization. Cognitive fear increases after treatment, but the coefficients do not reach statistical significance. In contrast, avoidance behavior (conative fear) rises in the first periods after individuals experience crime themselves or through someone close. This increase, however, weakens over time. Affective fear also shows positive responses following treatment, yet these effects are moderate and do not appear to significantly persist in the longer run.

Taken together, the results underline the importance of personal exposure to crime in shaping fear of crime. While combining direct and indirect victimization yields broader and more consistent effects than indirect exposure alone, the dynamic pattern remains largely short-lived. Fear responses intensify shortly after exposure but tend to return to baseline levels in subsequent periods. This suggests that proximity to crime, be it personal or relational, activates temporary cognitive and behavioral adjustments, yet these reactions are not permanently sustained in the absence of repeated exposure, thereby possibly suggesting internalization of fear.

5 Discussion

Our findings show that direct victimization has a strong and lasting influence on cognitive and affective fear. This pattern is consistent with earlier studies that describe fear as an emotional reaction that is closely tied to personal vulnerability and past experience (Garofalo, 1981; Ferraro, 1995). The persistence of both forms of fear suggests that the emotional weight of a victimization event continues to shape internal assessments of danger, even when individuals have had time to reflect on their experience.

The temporary rise in avoidance behavior shows that behavioral responses follow a different pattern. Previous research documents that avoidance behavior increases after incidents of crime but often returns to previous routines once the initial shock fades (Rader et al., 2007; Hibdon et al., 2016). Our results reinforce this idea. Individuals react immediately by modifying their movements but do not maintain these changes in the long run. This suggests that cognitive and emotional reactions may be stronger indicators of lasting fear than protective actions.

Our study also speaks to the difference between direct and indirect victimization. We find that indirect victimization creates temporary increases in fear and defensive behavior. However, indirect exposure does not produce the same persistent increase in cognitive or affective fear as direct exposure. This difference suggests that the intensity of the experience matters for how individuals update their internal assessments of risk.

Despite these contributions, our study has several limitations. First, the number of individuals who completed all five waves is relatively small. This limits the precision of some subgroup analyses and may prevent us from detecting smaller effects. Second, the time horizon of our panel is short. We observe individuals for about two years, which might not be enough to capture longer adjustments in fear or changes that arise from victimization. Third, our data come from a self reported survey. While this approach allows us to measure perceptions directly, it depends on respondents' willingness to report victimization and fear accurately. These limitations should be kept in mind when interpreting our findings.

6 Conclusion

This paper examined how direct and indirect victimization shape different forms of fear of crime. Using the PaWaKS panel dataset with five waves (Wagner et al., 2024), we studied how cognitive, affective fear and conative fear (preventive behavior) change after a victimization event. Our findings show that direct victimization leads to a lasting rise in cognitive and affective fear, while conative fear (preventive behavior) increases only in the short run. Indirect victimization produces smaller and short lived changes. Victimization does not influence beliefs about long term crime trends.

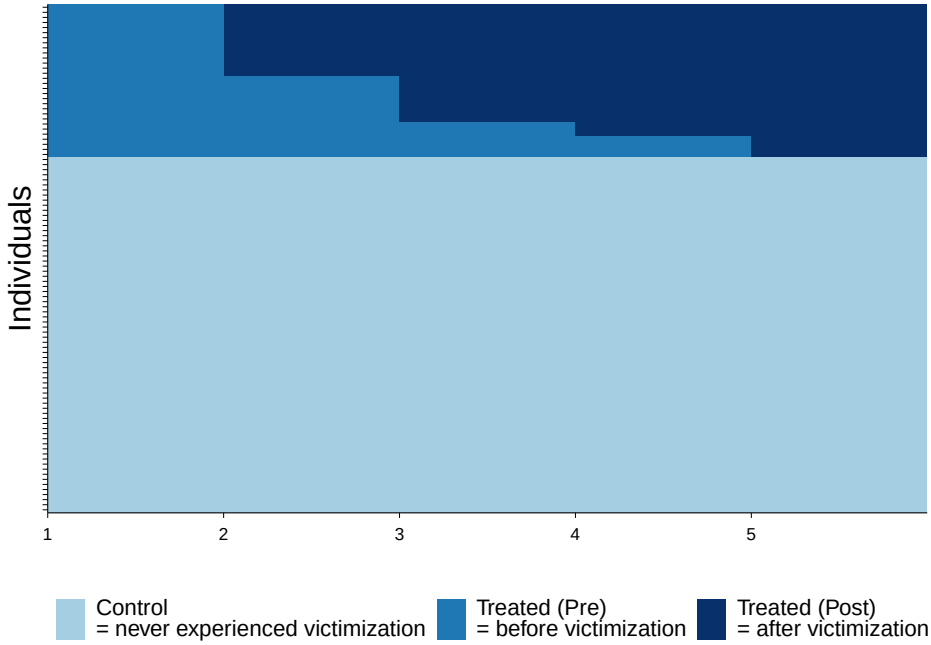
These results point to clear differences between emotional, cognitive, and behavioral reactions to crime.

Future research could explore three areas. First, longer panels would allow us to study whether fear eventually returns to previous levels or continues to rise after victimization. Second, local crime data could be linked to survey responses to see whether the broader environment shapes how people react to victimization. Third, qualitative work might help explain why some forms of fear remain stable while others fade quickly. Such research would deepen our understanding of how personal experience interacts with public information and how fear develops within different social contexts.

Appendices

A Sample

Figure A.5: Balanced Panel



Notes: The figure shows 100 randomly selected individuals.

Table A.6: Descriptive Statistics (Full Unrestricted Sample)

Treated	Obs.	Mean	SD	Min	Max
Cognitive Fear	1404	2.231	0.940	1.000	6.780
Conative Fear	1397	4.194	1.731	1.000	7.000
Affective Fear	1397	2.205	0.946	1.000	6.670
Control					
Cognitive Fear	5539	2.030	0.841	1.000	7.000
Conative Fear	5523	4.066	1.680	1.000	7.000
Affective Fear	5495	2.011	0.856	1.000	7.000

B Additional Heterogeneity Analyses

B.1 Heterogeneity: Difference-in-Differences

Table B.7: Difference-in-Differences Heterogeneity (Cognitive Fear): Restricted Sample

	Gender		Education		Income	
	Female	Male	High	Low	High	Low
ATET ×	0.202**	0.145*	0.187***	0.145	0.151**	0.163*
	(0.085)	(0.079)	(0.070)	(0.101)	(0.073)	(0.084)
Constant	1.956***	1.956***	1.956***	1.956***	1.956***	1.956***
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Effect Size in %	10.327	7.413	9.560	7.413	7.720	8.333
Outcome Mean	1.956	1.956	1.956	1.956	1.956	1.956
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.705	0.705	0.706	0.705	0.705	0.705
Obs.	1855	1855	1855	1855	1855	1855

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the static difference-in-differences specifications for the cognitive fear of crime outcome variable. The treatment group consists of all directly victimized individuals interacted with their respective characteristic from each column. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

Table B.8: Difference-in-Differences Heterogeneity (Conative Fear): Restricted Sample

	Gender		Education		Income	
	Female	Male	High	Low	High	Low
ATET ×	0.216	0.156	0.360***	-0.083	0.224	0.114
	(0.150)	(0.132)	(0.118)	(0.169)	(0.139)	(0.147)
Constant	4.004***	4.004***	4.004***	4.004***	4.004***	4.004***
	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
Effect Size in %	5.418	3.913	9.029	-2.082	5.618	2.859
Outcome Mean	3.987	3.987	3.987	3.987	3.987	3.987
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.837	0.837	0.838	0.837	0.837	0.837
Obs.	1778	1778	1778	1778	1778	1778

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the static difference-in-differences specifications for the cognitive fear of crime outcome variable. The treatment group consists of all directly victimized individuals interacted with their respective characteristic from each column. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

Table B.9: Difference-in-Differences Heterogeneity (Affective Fear): Restricted Sample

	Gender		Education		Income	
	Female	Male	High	Low	High	Low
ATET ×	0.097	0.184**	0.160**	0.129*	0.146*	0.127
	(0.069)	(0.085)	(0.080)	(0.077)	(0.080)	(0.083)
Constant	1.916***	1.916***	1.916***	1.916***	1.916***	1.916***
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Effect Size in %	5.149	9.766	8.493	6.847	7.749	6.741
Outcome Mean	1.884	1.884	1.884	1.884	1.884	1.884
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.726	0.728	0.727	0.726	0.727	0.727
Obs.	1830	1830	1830	1830	1830	1830

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the static difference-in-differences specifications for the cognitive fear of crime outcome variable. The treatment group consists of all directly victimized individuals interacted with their respective characteristic from each column. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

Table B.10: Difference-in-Differences Heterogeneity (Cognitive Fear): Unrestricted Sample

	Gender		Education		Income	
	Female	Male	High	Low	High	Low
ATET ×	0.128**	0.068	0.096*	0.101	0.052	0.137**
	(0.062)	(0.060)	(0.054)	(0.070)	(0.058)	(0.061)
Constant	2.074***	2.074***	2.074***	2.075***	2.074***	2.075***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Effect Size in %	6.184	3.285	4.638	4.879	2.512	6.662
Outcome Mean	2.070	2.070	2.070	2.070	2.070	2.070
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.822	0.822	0.822	0.822	0.822	0.822
Obs.	6943	6943	6943	6943	6943	6943

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the static difference-in-differences specifications for the cognitive fear of crime outcome variable. The treatment group consists of all directly victimized individuals interacted with their respective characteristic from each column. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

Table B.11: Difference-in-Differences Heterogeneity (Conative Fear): Unrestricted Sample

	Gender		Education		Income	
	Female	Male	High	Low	High	Low
ATET ×	0.120	0.036	0.159*	-0.021	0.064	0.088
	(0.091)	(0.098)	(0.087)	(0.103)	(0.095)	(0.095)
Constant	4.068***	4.068***	4.068***	4.068***	4.068***	4.068***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Effect Size in %	2.933	0.880	3.886	-0.513	1.564	2.151
Outcome Mean	4.092	4.092	4.092	4.092	4.092	4.092
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.872	0.872	0.872	0.872	0.872	0.872
Obs.	6920	6920	6920	6920	6920	6920

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the static difference-in-differences specifications for the cognitive fear of crime outcome variable. The treatment group consists of all directly victimized individuals interacted with their respective characteristic from each column. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

Table B.12: Difference-in-Differences Heterogeneity (Affective Fear): Unrestricted Sample

	Gender		Education		Income	
	Female	Male	High	Low	High	Low
ATET ×	0.091*	0.063	0.085	0.067	0.068	0.080
	(0.052)	(0.065)	(0.057)	(0.059)	(0.057)	(0.060)
Constant	2.091***	2.091***	2.091***	2.091***	2.091***	2.091***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Effect Size in %	4.437	3.072	4.144	3.267	3.315	3.901
Outcome Mean	2.051	2.051	2.051	2.051	2.051	2.051
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.827	0.827	0.827	0.827	0.827	0.827
Obs.	6892	6892	6892	6892	6892	6892

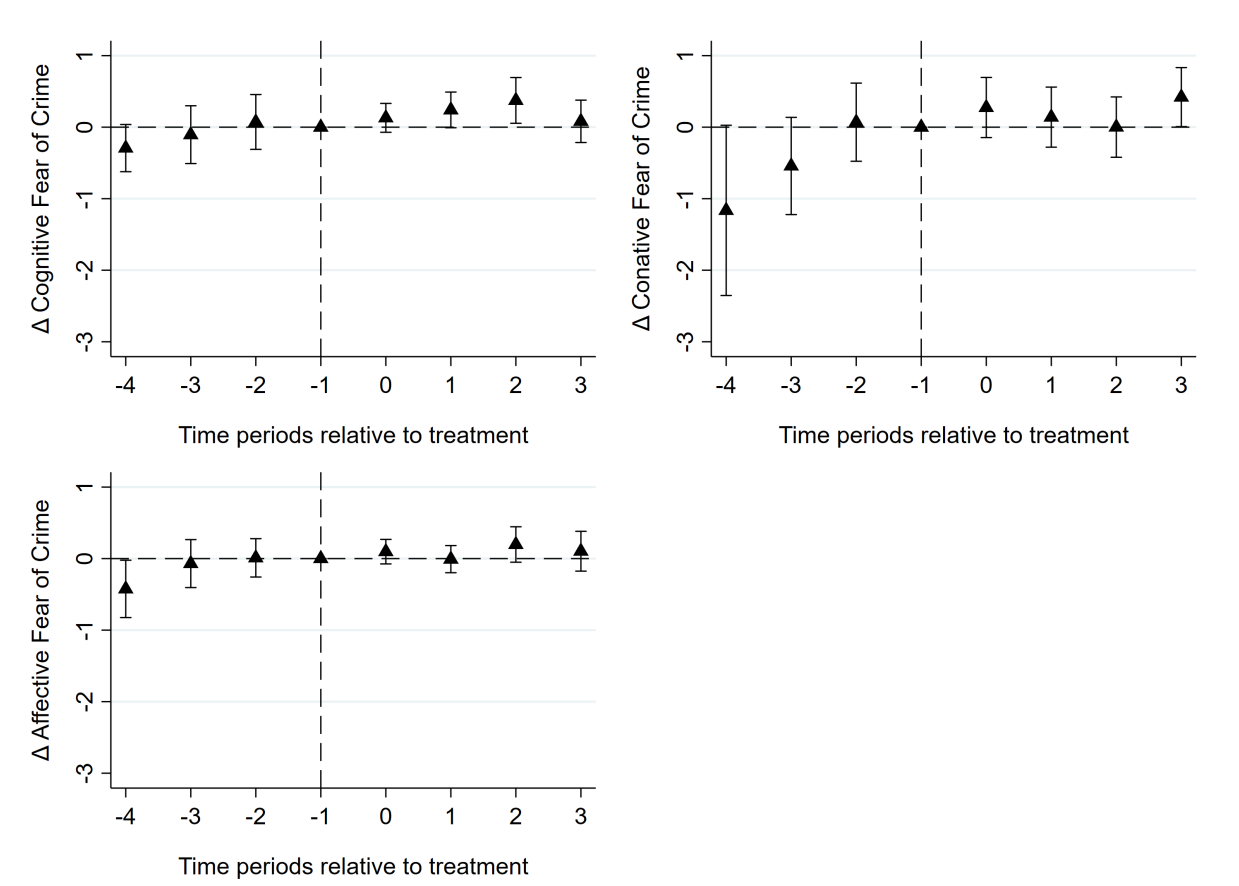
Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the static difference-in-differences specifications for the cognitive fear of crime outcome variable. The treatment group consists of all directly victimized individuals interacted with their respective characteristic from each column. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

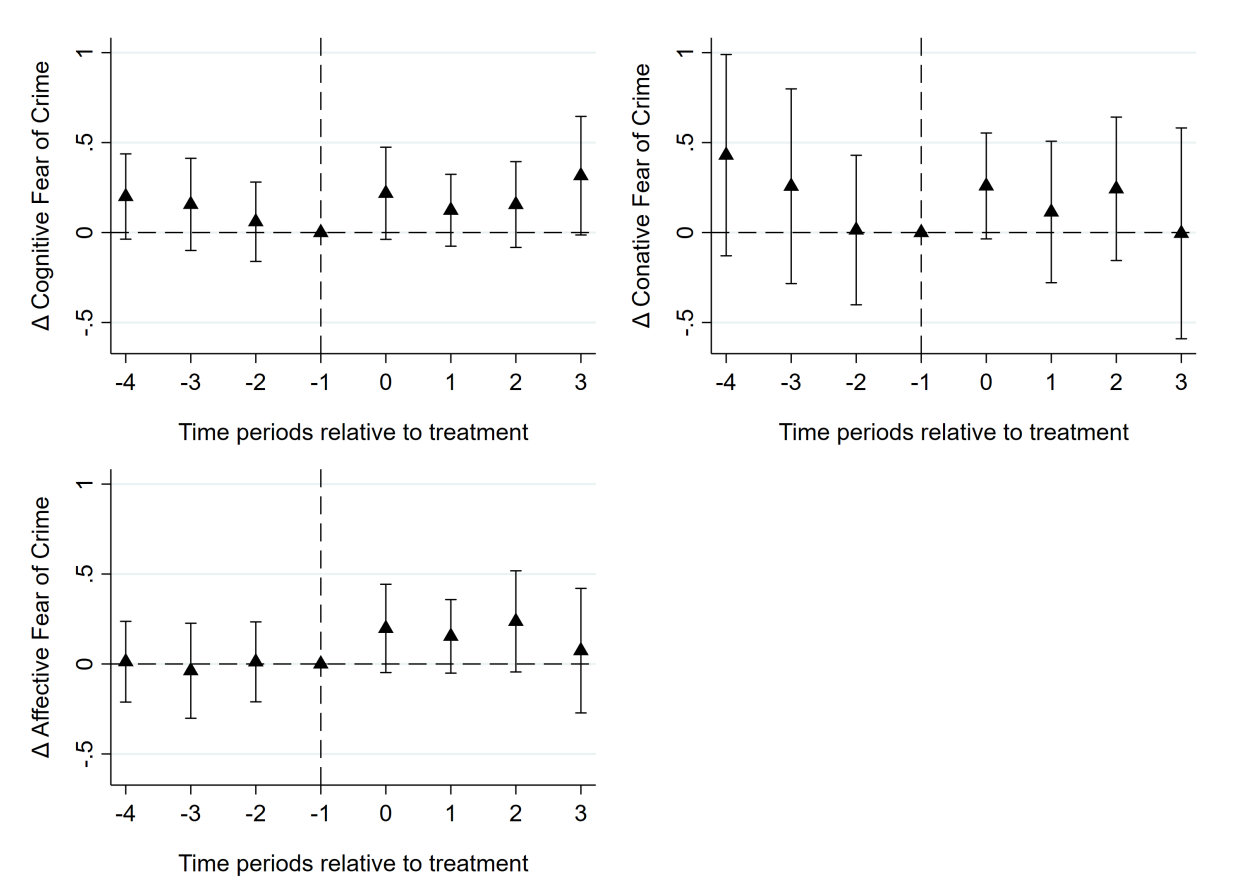
B.2 Heterogeneity: Event Studies

Figure B.6: Fear of Crime × Female (Restricted Sample)



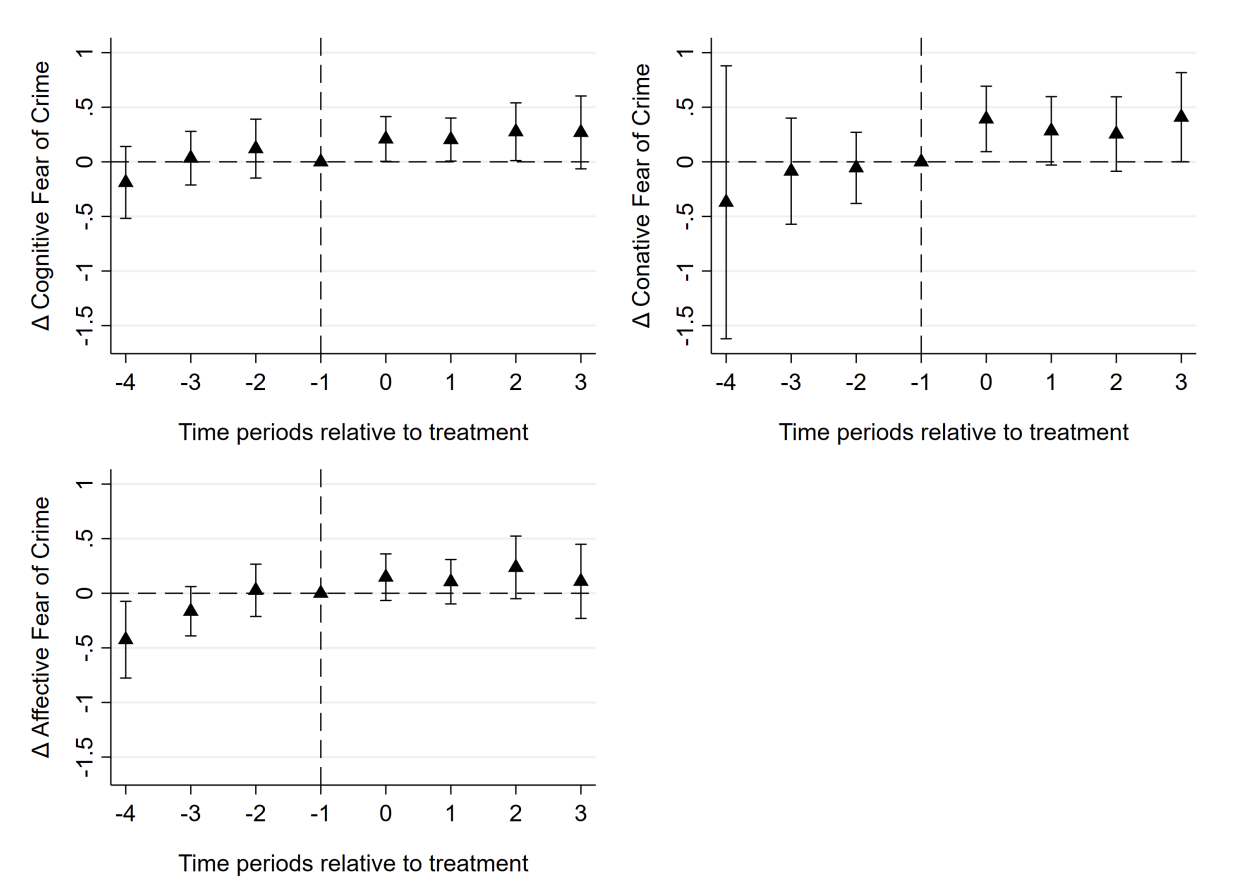
Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

Figure B.7: Fear of Crime × Male (Restricted Sample)



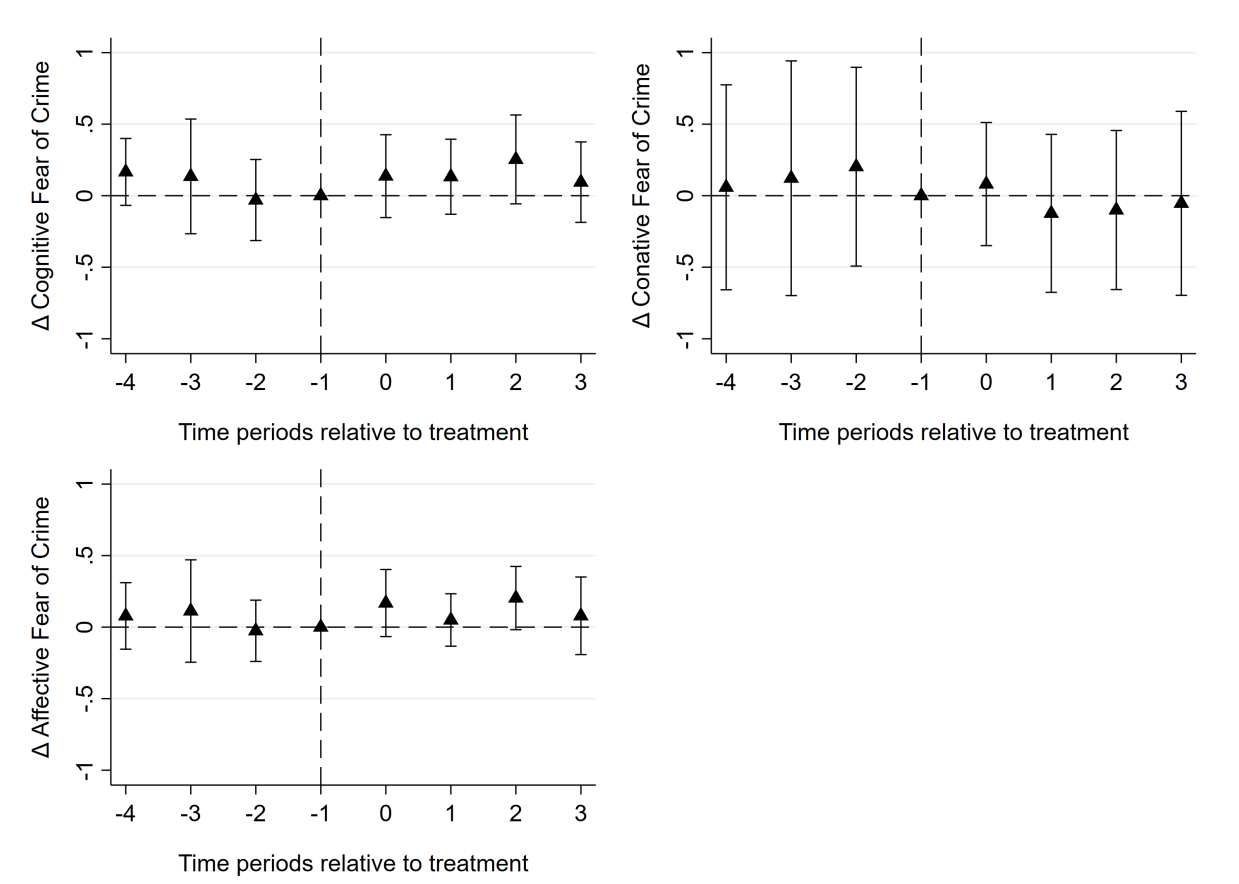
Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

Figure B.8: Fear of Crime × High Education (Restricted Sample)



Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

Figure B.9: Fear of Crime × Low Education (Restricted Sample)



Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

B.3 Inverse Probability Weighting

Table B.13: Survival Model Estimates

	(1)
	Stay in Next Wave
Treated in Current Wave	-0.114
	(0.091)
Gender: Female	-0.182***
	(0.051)
Education: High	0.027
	(0.052)
Income: High	-0.042
	(0.051)
Settlement Size	
20-99,000 Inhabitants	-0.106
	(0.095)
100,000-499,999 Inhabitants	-0.036
	(0.090)
$>$ 500,000 Inhabitants	-0.063
	(0.087)
Waves	
2	0.805***
	(0.068)
3	0.156**
	(0.071)
4	-0.175**
	(0.085)
Constant	0.413***
	(0.091)
Pseudo R-squared	0.022
Obs.	6693

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table B.14: Difference-in-Differences Estimation Results (IPW)

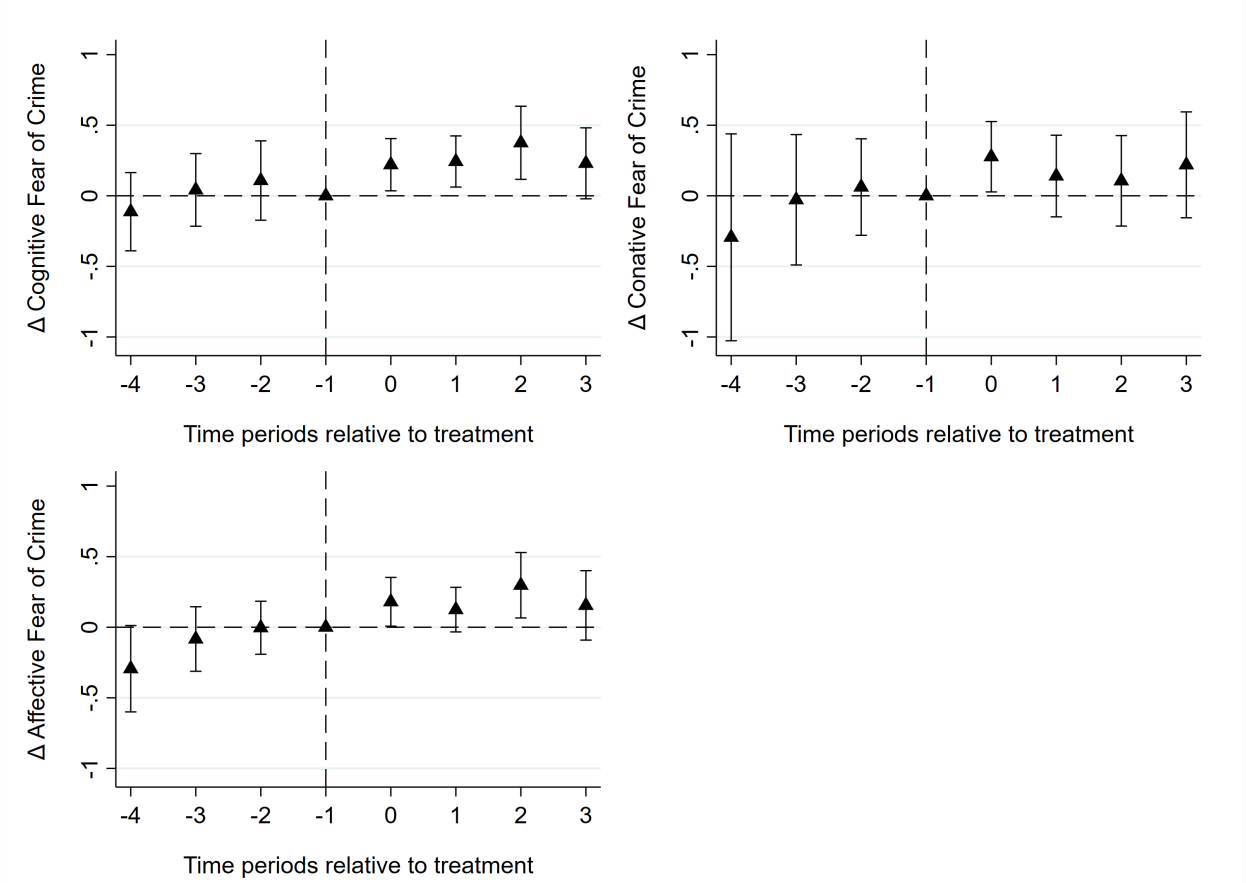
	Cognitive Fear	Conative Fear	Affective Fear
ATET	0.222***	0.191*	0.189***
	(0.069)	(0.101)	(0.068)
Constant	2.113***	4.209***	2.041***
	(0.035)	(0.046)	(0.032)
Effect Size in %	10.756	4.549	9.541
Outcome Mean	2.064	4.199	1.981
Individual FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
R-squared	0.699	0.838	0.727
Obs.	1855	1748	1805

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the difference-in-differences specifications for each outcome variable. For each outcome, we estimated the effect using a treatment indicator that identifies individuals based on their self-reported victimization in any period. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

Figure B.10: Fear of Crime - Event Study Results (IPW)



Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

B.4 Indirect Victimization

Table B.15: Difference-in-Differences Estimation Results (Indirect Victimization)

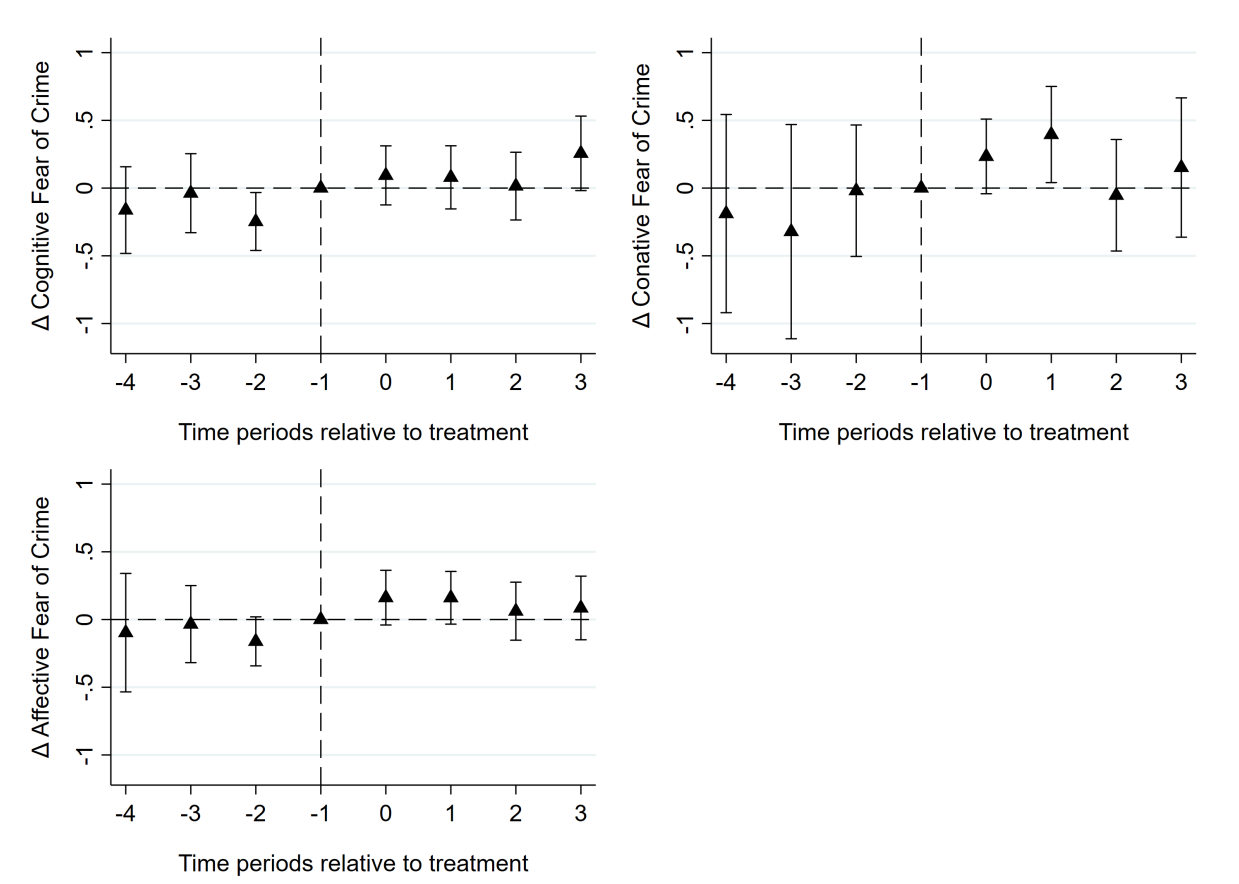
	Cognitive Fear	Conative Fear	Affective Fear
ATET	0.116	0.237*	0.170*
	(0.098)	(0.136)	(0.088)
Constant	1.815***	3.958***	1.770***
	(0.048)	(0.082)	(0.046)
Effect Size in %	6.263	5.983	9.361
Outcome Mean	1.852	3.961	1.816
Individual FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
R-squared	0.677	0.840	0.711
Obs.	683	677	657

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the static difference-in-differences specifications for the cognitive fear of crime outcome variable. The treatment group consists of all indirectly victimized individuals interacted with their respective characteristic from each column. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

Figure B.11: Indirect Victimization - Event Study Results



Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals indirectly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

B.5 Direct & Indirect Victimization

Table B.16: Difference-in-Differences Estimation Results (Direct & Indirect Victimization)

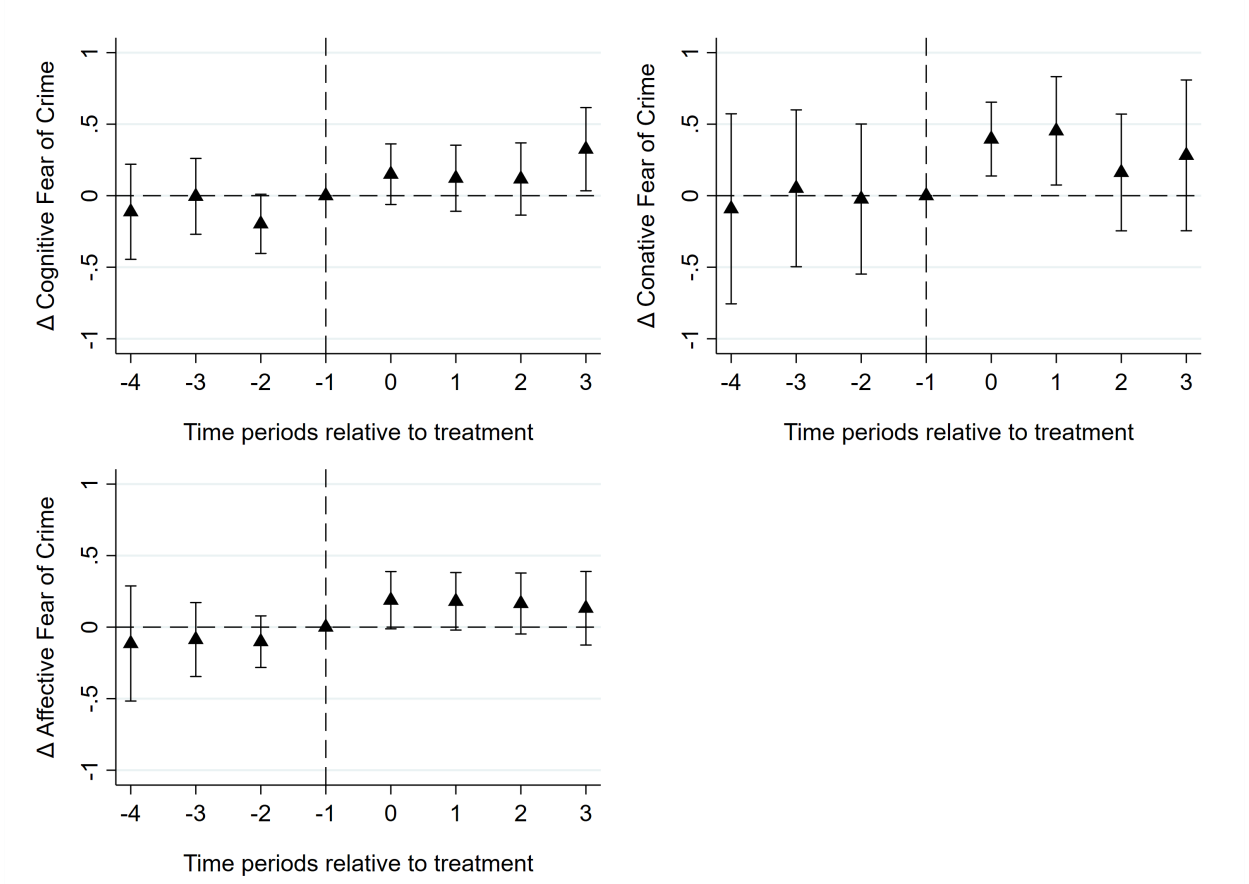
	Cognitive Fear	Conative Fear	Affective Fear
ATET	0.161*	0.373***	0.198**
	(0.097)	(0.126)	(0.090)
Constant	1.820***	3.939***	1.775***
	(0.048)	(0.082)	(0.046)
Effect Size in %	8.684	9.431	10.897
Outcome Mean	1.854	3.955	1.817
Individual FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
R-squared	0.677	0.847	0.710
Obs.	674	652	653

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The table presents the results from the static difference-in-differences specifications for the cognitive fear of crime outcome variable. The treatment group consists of all directly and indirectly victimized individuals interacted with their respective characteristic from each column. The control group in all specifications consists of individuals who were never victimized. Robust standard errors are clustered at the individual level.

Figure B.12: Direct & Indirect Victimization - Event Study Results



Notes: 95% confidence intervals with robust standard errors clustered at the individual level. Treatment group: individuals directly and indirectly victimized in any time period. Control group: individuals who were never victimized. Estimation is based on Sun and Abraham (2021).

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