



PROTON

Modelling the processes leading
to organised crime and terrorist networks



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Introduction

This deliverable presents the reports of T5.3 as part of WP5. It focuses on presenting the policy recommendations based on the results of the PROTON-S simulations. Since the consortium agreed on the development of separate models for the recruitment into organised crime and terrorist networks, the report is divided in two sections.

1 Policy Recommendations on the recruitment into organised crime

The results of the systematic review and innovative studies conducted in WP1 showed that the recruitment into organised crime is driven by different factors depending on the types of criminal organization, the socio-economic conditions and the institutional and law enforcement reactions. Nevertheless, the studies showed that involvement into organized crime often occur through social relations, including family, friendship, co-working, acquaintances, and co-offending. At the same time, individuals recruited into organized crime often exhibit prior criminal convictions, and criminally exploitable skills (e.g. propensity for violence). These results indicate that entering into organised crime is the results of complex socialization processes and relational dynamics that may often start from childhood, although in a non-negligible number of cases individuals were involved into criminal groups at in their adulthood. The PROTON-S simulations of WP5 were based on these findings and on the results of the experiments conducted in WP4. Consequently, the recruitment into organized crime was modelled as a complex dynamic resulting of both social relation and individual attributes.

Regarding the recruitment into organised crime, PROTON-S comprised experiments simulating **four interventions** designed to reduce the recruitment into organised crime:

- 1) targeting OC leaders
- 2) targeting facilitators
- 3) primary socialization
- 4) secondary socialization



The four interventions were run in **two simulated social contexts**, each based on empirical evidence from specific cities and regions

- 1) a Southern European context, based on evidence from Palermo and Sicily
- 2) a Northern European, based on evidence from Eindhoven and the Netherlands.

Furthermore, the PROTONS-S simulations tested the impact of **two levels of intensity** of each intervention.

- 1) The “standard” interventions were based on options and parameters which allowed to target a reasonable, albeit relatively low, share of potential targets.
- 2) The “strong” interventions relied on much more intensive implementation of the tested policies.

The four interventions, the two contexts, and the intensity levels were selected on the basis of the results of previous work packages, a PROTON workshop in Rome and three ad-hoc meetings with policy makers in Milan and Amsterdam in September 2018.

Overall, the interventions rely on different theoretical and policy assumptions. The first two interventions modify the probability of arrest of specific agents, while maintaining the overall levels of law enforcement interventions constant. They are also inspired by a growing literature on criminal network disruption (Bichler & Malm, 2015; Bright, Koskinen, & Malm, 2019; Calderoni & Superchi, 2019; Duxbury & Haynie, 2019; McMillan, Felmlee, & Braines, 2019). The primary and secondary socialization interventions focus on youth at risk of involvement into organized crime. They are inspired by several theoretical frameworks such as social learning, differential association, social embeddedness of organised crime and social opportunity structure (Sutherland, 1947; Akers, 2009; Kleemans & Van De Bunt, 1999; Kleemans & de Poot, 2008) and by few policies implemented against organized crime (Sergi, 2018).

1.1 Summary of findings

Overall, the PROTON-S simulations generate realistic outcomes. The number of recruited individuals is stable across the simulated period, mirroring realistic trends in the potential growth or decrease of the group membership. Furthermore, total crimes are stable across different runs, with a slowly declining trend across time, which is comparable to the declining crime rates experienced



across Europe in the last decades. The realistic and reliable structure of the simulations can be considered the first important outcome of PROTON-S, considering that the application of ABMs to complex societal dynamics is still in its infancy and that the PROTON-S simulations are certainly more complex, than those presented in the literature.

As anticipated above, the PROTON-S simulations on organized crime tests the impact of four different interventions, in two social contexts and with two levels of intensity. This yields sixteen possible combination, and four baseline combinations (for each social context and level of intensity) where not intervention is implemented for a total of twenty combinations.

The **results for the strong interventions** are as follows:

- In the Southern European context:
 - targeting OC leaders reports no statistically significant effect on the recruitment into OC
 - targeting facilitators reports *a statistically significant and negative effect* on the recruitment into OC
 - primary socialization reports *a statistically significant and negative effect* on the recruitment into OC
 - secondary socialization reports no statistically significant effect on the recruitment into OC
- In the Northern European context:
 - targeting OC leaders reports no statistically significant effect on the recruitment into OC
 - targeting facilitators reports *a statistically significant and negative effect* on the recruitment into OC
 - primary socialization reports no statistically significant effect on the recruitment into OC
 - secondary socialization reports no statistically significant effect on the recruitment into OC

The **results for the standard interventions** do not report any statistically significant effect on the recruitment into OC. However, in the Southern European context, the average number of recruited individuals over the simulated periods with any intervention is always lower than the number of recruited individuals in the baseline scenario (no intervention). Albeit not meeting the standard threshold for statistical significance, the results for the standard interventions suggest that: a) the simulations are stable and reliable, b) the standard interventions impact the number of recruited members, although the lack of statistically significant effect may be due to a small size of the effect coupled with a low number of repetitions c) different intensity levels (ideally between the



current standard and strong interventions) may have a statistically significant impact.

1.2 Policy implications and recommendations

The results of PROTON-S simulation on the recruitment into organized crime allow to point out several policy implications and formulate a few recommendations. First we focus on the implications and recommendations related to use of agent-based modelling to inform policies. Secondly we focus on the specific interventions tested in the simulations. Lastly we propose additional considerations regarding the design of the interventions and the importance of the social context.

1.2.1 ON THE USE OF AGENT-BASED MODELLING TO INFORM POLICIES

Agent-based modelling is increasingly popular also in the social science and policy makers may feel compelled to resort to complex computational methods (the ubiquitous 'big data', 'machine learning', and 'artificial intelligence') to provide answers and solutions to complex social challenges. Overall, project PROTON shows that agent-based simulations may be a useful additional tool to explore 'what works?' in tackling the recruitment into organized crime. However, simulations should not be considered the silver bullet and should be always confronted with additional evidence from other methods. In particular:

- Policy makers should be aware of the advantages and disadvantages of agent-based modelling. In particular, simulations for policy purposes should rely on very specific and detailed empirical evidence to generate realistic simulations of the social contexts.
- In addition to considering agent-based simulations, policy makers should consider gathering evidence from different types of methods and sources and also consider the financial, political, social and ethical costs and benefits of the policies.
- compared to other instruments, agent-based models may allow to explore a larger variety of theoretical policy interventions and to conduct more repeated trials with different configurations. This may enable policy makers to investigate a larger number of possible interventions than other traditional methods (e.g. randomized controlled experiments) and at a possibly lower cost.



- Policy makers should be aware that complex computational methods, if not properly informed by empirical evidence and if not weighted against evidence for a variety of sources, may result in a 'black box' with limited transparency and accountability.

Based on the experience of PROTON policy makers may wish to further refine and adapt the PROTON-S simulations to specific types of organized crime, and to specific social contexts. For this purpose, the PROTON Consortium has developed an Introductory Manual, available on the project website, which provides summary indications on the steps necessary to further refine the application of agent-based modelling to the recruitment into organized crime.

1.2.2 RECOMMENDATIONS ON THE FOUR INTERVENTIONS

Targeting facilitators

The intervention targeting facilitators receives the strongest support from the PROTON-S simulations. For both social contexts and in the strong level of intensity, it results in a statistically significant reduction in the number recruited individuals. In a complex society, organized crime groups need a wide range of skills and competences which cannot be easily internalized (e.g. customs officials, lawyers and accountants, chemists). There is growing evidence of the importance of facilitators for the commission of complex crimes (Morselli, 2001; Morselli & Roy, 2008; Van Koppen & de Poot, 2013; Bright, Greenhill, Reynolds, Ritter, & Morselli, 2015). Intense law enforcement scrutiny of such facilitators indirectly affects the probability of commission of complex crimes and, in turn, the recruitment into organized criminal groups. These results are in line with the literature pointing out the social embeddedness of organized crime and its parasitic interaction with other social actors (e.g. in the legitimate economy and politics) (Kleemans & Van De Bunt, 1999; Kleemans & de Poot, 2008; Catino, 2019).

The PROTON-S simulations enable to formulate the following policy recommendations:

- **Policy makers should promote a scrutiny of the types of crimes perpetrated by organized criminal groups in a local area, and identify the required skills and competences which existing organized crime groups are unable to develop internally.** Different geographic, social, economic and criminal contexts are certainly affecting the number and type of facilitators. For example,



- where organized criminal groups engage in “transit crimes” (Kleemans, 2007) such as cocaine trafficking, intensified monitoring may focus on e.g. large-scale transport, access to custom procedures and information.
- where organized crime groups are involved in the manufacturing and distribution of illicit products (e.g. methamphetamines), intensified monitoring may focus on e.g. trained chemists as well as lab managers.
- where organized crime groups are infiltrating the legitimate economy and public procurement, intensified monitoring may focus on e.g. employees of administrations granting licenses and awarding contracts, legal advisors and accountants.
- **Individuals holding the identified skills and competences may be subject to more intense monitoring, to increase the probability of detection and arrest if they engage in criminal conducts.** To achieve this goal:
 - law enforcement agencies should have adequate resources and capacities to adequately intensify monitoring of specific facilitators, which may require training and organizational adaptations.
 - Intensified monitoring by law enforcement must result in substantially higher probability of detection and arrest compared to the normal levels. Policy makers and agencies should establish the most effective and efficient tactics to achieve such levels.
 - the intensified monitoring of facilitators should be maintained for a substantial period of time to influence the recruitment into organized crime. Agencies should consider how to make this effort sustainable in the context of their budgets and mandates.

Primary socialization

The intervention on primary socialization results in a statistically significant reduction in the number of recruited individuals only in the Southern European context and in the strong level of intensity. While there is abundant evidence on the importance of parental and kinship ties for the involvement in traditional forms of organized crime, as the mafias (Gambetta, 1993; Paoli, 2003; Catino, 2019), recent studies show that children of organized crime members are at higher risk of delinquency and criminality in different social and geographic contexts (Spapens & Moors, 2019; Van Dijk, Kleemans, & Eichelsheim, 2018). This adds to the consolidated evidence on the transgenerational transmission of criminal behavior (Besemer, Ahmad, Hinshaw, & Farrington, 2017). Nevertheless, the simulation on the primary socialization intervention affects the



recruitment into organized crime only in the Southern European context and with strong interventions.

The PROTON-S simulations enable to formulate the following policy recommendations:

- policies aiming at addressing children in “organized crime families” with the goal to sever the relations between criminal parents and children could be promising **in areas with a strong presence of organized crime groups**.
- to impact on recruitment:
 - policy makers must be able to correctly identify the targeted families.
 - in addition to the removal from parental (normally paternal) influence, policies should include measures ensuring that other relatives involved in organized crime are unable to influence the children
 - mothers and children should receive psychological, welfare, and educational support. The well being of mothers and children should be at the main priority to prevent the negative impact of the intervention on the psycho-social conditions of the targets.
 - the overall number of targeted families should achieve a substantial share of the “organized crime families”, ideally ensuring that all children in these families are targeted.

Targeting OC leaders and secondary socialization

Interventions targeting OC leaders and secondary socialization do not result in a statistically significant reduction on the number of organized crime members. Policy makers aiming at impacting on recruitment should consider other options as these interventions may not offer the highest return on investment.

The lack of effect on recruitment does not necessarily imply that such policies may be ineffective towards other policy objectives. In fact, they may still report positive externalities. For example, targeting OC leaders may still successfully disrupt criminal organizations, reducing their operational capacity, and offer information allowing to detect and arrest also other members. Similarly, policies aiming at secondary socialization (e.g. education and training programmes for children in school age) may effectively improve their educational and professional attainment, thus increasing the employability, income and social capital of the targeted children.



1.2.3 RECOMMENDATIONS ON INTERVENTION DESIGN AND THE IMPORTANCE OF THE SOCIAL ENVIRONMENT

Intensity of the interventions

The PROTON-S simulations show that statistically significant reductions in the recruitment into organized crime are achieved only through strong interventions. While the operationalization of the interventions in the simulations can take virtually endless configurations (and consequently endless simulation time), the results point out that effective policies must certainly be able to address a relevant share of the potential targets (e.g. facilitators or children of organized crime members) and they must achieve a good level of precision, i.e. targeting actual facilitators or children at risk. Intervention size and precision are certainly relevant from a policy perspective.

These considerations support the following policy recommendations:

- policies successfully impacting on the recruitment into organized crime should aim at targeting a large share of the potential targets.
- the size of the intervention is inevitably connected to the available resources to policy makers and law enforcement agencies.
- the precision of the intervention is related to the quality of information available to policy makers to properly identify and target the right individuals. Precise identification of the targets may be difficult and some targeted individuals may be “false targets”. Implementing interventions on false targets may have negative impacts depending on the type of intervention (e.g. an extreme case where the primary socialization intervention reduces the contacts between a non-OC father and his child).
- Precision and size of intervention are interrelated: the larger the intervention, the more likely it is that a higher share of correct targets will be involved. However, resource requirements will also increase, as well as the risk that the intervention involves false targets.

Different social environments and different policies

Interventions may have different effects depending on the social context. PROTON-S simulations on organized crime went beyond the requirements of the Grant Agreement and applied the interventions in two distinct social contexts (Southern and Northern European contexts), showing that interventions’ effects are affected by the context. Policy makers must be aware that interventions can be substantially affected by the social contexts. In this regard, we recommend that:



- Policy makers should be aware that same interventions implemented in different social contexts can yield different results. There are no one-size-fits-all solutions.
- Policy makers considering to apply agent-based modelling to their specific context should consider that simulations can usefully inform policy if, and only if, they are based on specific empirical evidence from the societies where the potential policies will be implemented.

2 Policy Recommendations on the recruitment into terrorist networks

Regarding the recruitment into terrorist networks, PROTON-S carried out experiments that simulated the effects of three key policies designed to reduce radicalization and recruitment in a simulated borough of a major European city. Each of the three policies were chosen based on: 1) the results of PROTON's work packages on terrorism, 2) their implement ability, 3) their real-life applications. The three policies tested were 1) Employment of high-risk individuals, 2) The introduction of additional community workers into existing community centers, 3) the replacement of a proportion of the existing police-force with community-policing police officers. Each policy was tested at a high level of dosage, in order to examine whether under optimal conditions a policy would have impact. One of the policies (employment) relies on a situational opportunity reduction framework that primarily affects individuals' routine activities. The other two policies are underpinned by the theoretical framework that by tackling underlying risk factors, and buffering protective factors, there will be a reduction in radicalization, and thereby a spillover effect to reducing recruitment.

2.1 Summary of findings

Of the three policies, only the employment initiative led to a statistically significant reduction in recruitment, however, it had no effect on underlying, dynamic risk-protective factors or radicalization. On the other hand, the community workers' initiative had statistically significant effects on underlying, dynamic risk-protective factors, leading to significant reductions in radicalization; but no spillover effect on recruitment. In the case of the



community-policing initiative, statistically significant effects were found only for improvements on trust/legitimacy.

2.2 Policy implications

Design and implementation of countering violent extremism (CVE) policies should include realistic objectives and expectations. Some policies may be better suited to addressing short-term, and more immediate goals and objectives, whereas for others it should be acknowledged that any anticipated results may take more time to materialize. CVE policies based on the idea that mitigating risk-factors and buffering protective factors can reduce radicalization and thereby recruitment, are based on a theoretical framework that is inherently long-term oriented. Changes in dynamic risk factors and radicalization require time, and for these changes to affect recruitment will take even longer.

At the heart of these findings are a group of realities of the European setting that require distinctions between short term and long term policies, and between goals of recruitment and prevention of radicalization. Based on realistic estimates our landscapes include large numbers of individuals who have radical ideas (European Values Survey, 2008). This means that there are large numbers of individuals that could be recruited in European urban settings. In the short term, there are many more potential recruits than recruiters can possibly contact and influence. This is a key reason why short term reductions in recruitment are affected most by an employment intervention. At the same time, it seems critical to the long term interests of European communities that the number of radicalized individuals is reduced over time, and certainly not increased over time. Both of the community interventions will have this impact and thus are important policies for government to consider.

The results of PROTON-S find that lowering unemployment among the top 5.6% high-risk individuals leads to relatively immediate reductions in recruitment. Unlike more long-term strategies that focus on dynamic risk-protective factors, employment changes the routine activities of high-risk individuals, thereby reducing opportunities for interactions with radicalizing and recruiting elements (Simi & Windisch, 2018). This finding follows the theoretical propositions of routine activities and differential association, which maintain that there is 1) a steady supply of potential offenders, and that 2) routine activities determine the availability of opportunities for engagement with deviant elements, and thereby determines criminal behaviors (Osgood et al., 1996; Haynie and Osgood, 2005; Apel & Horney, 2017). The findings also follow the literature on desistance which has found that encouraging desistance from terrorism is likely more achievable



than de-radicalization, and employment can lead to desistance through changes to routine activities (Windisch, Simi, Logan and McNeel, 2018).

In terms of implementation, it is important that suitable jobs are found, and if necessary, that additional training is provided to the potential employees in order to ensure that they are not underemployed. Some research indicates that under-employment can also be a risk factor for radicalization and recruitment. Under-employment is also more likely to lead to job-loss, which Work Package 2 studies found to be a risk factor for recruitment. In this regard, studies have found that some jobs, such as construction, may encourage after work leisure activities—such as drinking—which increase the likelihood of deviant behaviors (Stinson, DeBakey, and Steffens, 1992). As demonstrated by Apel & Horney (2017), the largest reductions in the risk of criminal offending through the employment-routine activities dynamic, are through high hours, high income, and high commitment employment.

Policies such as community workers explicitly seek to enhance integration, with the idea that this ought to reduce radicalization (Rabasa et al., 2011:141). As such, improving integration and radicalization are in and of themselves objectives, even if they do not translate into reductions in recruitment. The Netherlands is one example of a country who has invested much into community workers, employing more than 4000, with a focus of efforts at the borough level (Christmann, 2012; Ranstorp & Hyllengren, 2013). One issue is that community workers may not be accessing high-risk individuals. In the UK, while PREVENT funding went primarily to community workers (33%) and other local community service providers (32%), with a stated objective of 'increasing resilience', only 3% of providers dealt with high-risk individuals 'justifying violent extremism' (Kellard, Mitchell and Godfrey, 2008). It has since been questioned whether or not community workers are in the best position to access high-risk individuals (Hirschfield et al., 2012). The results of PROTON-S may support these conclusions.

Similarly, with regards to community policing, the underlying rationale is that more procedurally just policing is intended to reduce feelings of discrimination and other grievances which can contribute to radicalization and recruitment. More importantly however, the rationale behind using community policing in countering violent extremism policy is that by improving trust and legitimacy, community members will be more willing to report suspicious activities and individuals to the police. As a result, police ought to be better positioned to intervene with these individuals (Jackson, Huq, Bradford and Tyler, 2013; Tyler, Schulhofer and Huq, 2010; Hasisi & Weisburd, 2014; Murphy, Madon and Cherney, 2018). The results of PROTON-S support the literature in that



community policing can and does improve trust and legitimacy. While the results show no spillover effect to radicalization and recruitment, they do indicate that police-community relations can be improved and thereby improve the police's position for identifying and intervening with high-risk individuals.

2.3 Integrative approach

Given the above, while we have evidence to suggest that employment can serve as a good policy to reduce recruitment in the short-term, there is still the outstanding challenge of identifying high-risk individuals. Identification of high-risk individuals may best be performed by community policing, who have the trust of community members and are positioned within the community. Community police could then refer high-risk individuals to community workers, who may be well positioned to carry out risk-assessment and referral for vocational training and employment. Such an integrative approach could capitalize on the strengths of the different stakeholders and mechanisms involved in the radicalization and recruitment process. We do not suggest that this is the only, or even the best way to integrate different approaches. PROTON-S did not examine such integrative approaches, nor did it examine the effects of community policing on reporting of high-risk individuals, or how directing high-risk individuals to community workers impacts radicalization and recruitment outcomes. Nevertheless, the results, when taken cumulatively, indicate that simultaneous implementation could be beneficial for both short and long term implementations, and for the generalized reduction of radicalization in communities. Future analyses should seek to identify the length of observation needed in order to identify long-term effects from policies such as community workers; the effects of re-directing high-risk individuals to community workers; and the effects of trust and legitimacy on community members' reporting to community police. Such analyses would serve to better inform the structuring of integrative policy approaches.

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