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SHORT CONTRIBUTION

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Further rejection of the cybercrime hypothesis

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Abstract

We recently rejected the hypothesis that increases in cybercrime may have caused the international crime drop. Critics subsequently argued that offenders switched from physical crime to cybercrime in recent years, and that lifestyle changes due to 'leisure IT' may have caused the international crime drop. Here we explain how the critics misrepresented our argument and do not appear to introduce anything new.

Keywords: Crime decline, Crime drop, Cybercrime hypothesis, Lifestyle hypothesis, Security hypothesis

Cybercrime hypothesis

We recently rejected the cybercrime hypothesis as an explanation for the international crime drop (Farrell and Birks 2018). For the sake of clarity, here we reiterate this hypothesis—which we derived from the work of varying scholars quoted in our original manuscript (Farrell and Birks 2018: p1). By our definition, the cybercrime hypothesis remains a matter of substitution—such that, as offenders expend their finite resources to exploit increasing cybercrime opportunities, they necessarily must devote less resources to those associated with traditional crimes—and thus an increase in cybercrime *causes* a reduction in traditional crime.

In considering this cybercrime hypothesis, we offered argument and evidence to conclude that physical crime such as burglary and car theft did not decline because offenders shifted to online crimes. Our principal supposition was that the spread of the Internet occurred too late to account for the major declines in crime experienced across high income countries. We supplemented this with the argument that while some crimes such as fraud may have adopted online modus operandi in more recent years, this would be years after the start of the major crime declines.

Our work was subsequently criticized. The criticism relating to cybercrime was that some crimes, such as fraud, may have adopted online modus operandi in recent years (Miro-Linares and Moneva 2019, hereafter M&M). This seems to be the same argument that we made. We wrote “A more plausible scenario is adaptive switching for cyber-assisted crime such as fraud—if offenders recognized the opportunity and acquired the resources and skills. However ... *this would still occur too late to account for the decline in physical crimes.*” (Farrell and Birks 2018: 2, emphasis added).

Our critics show that online banking fraud in the UK increased from 2007 while check fraud declined, from which they infer substitution by offenders who preferred online crime for whatever reason. There are other plausible explanations for both trends. A general decline in check use would reduce the number of opportunities for check fraud, for example. Moreover, there seems to be no evidence in our critics' data indicating the proposed substitution effect. Perhaps more importantly for present purposes, if some substitution did occur 15 years or so after physical crime's decline, this would support *our* original thesis.

We could stop here. In our view, the remainder of our critics' paper does not really relate to the cybercrime hypothesis. Nevertheless, we will consider some of the issues below.

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Lifestyles revisited

In rejecting the cybercrime hypothesis, we observed that changes to the lifestyles of victims and offenders may warrant consideration, but would be a distinct hypothesis. We wrote that “It is plausible that the Internet has changed lifestyles and culture—keeping potential offenders and victims indoors thereby reducing their involvement with contact crime and increasing guardianship of property.” (Farrell and Birks 2018: 3). A decade ago, one of us suggested a “changing lifestyles and routine activities hypothesis”, asking “Have the work and leisure routines of individuals changed in ways that could significantly affect crime patterns? This could include house ownership [and] technological change that leads to new fashions and lifestyle changes ... Felson (1998) suggested routine activity-based explanations [for the crime decline] but otherwise the theory seems to have been largely overlooked.” (Farrell et al. 2010: 30). The possibility that crime declined because men spend more time at home and in domestic tasks, that deindustrialization is causing the labor force to move indoors, and that the internet causes more socializing at home, has been previously mooted (Alper et al. 2013), while switching from crime to computer gaming remains an un-evidenced conjecture (e.g. Griffiths and Sutton 2013). A review of crime drop explanations noted that “it is conceivable that the Internet has induced lifestyle changes for both potential offenders and potential victims (with consequent impacts on guardianship if everyone stayed home more) that have had a subsequent *consolidation effect significantly after the crime drop began*.” (Farrell et al. 2014: 457, emphasis added). Such conjectures posit non-criminal changes to lifestyles as causal.

We refer here to the lifestyle hypothesis for consistency with Hindelang et al. (1978) and past practice in crime drop research. Note that lifestyle changes have occurred before and after the internet became popular. Note that since the internet has become popular, lifestyles have also changed due to other factors besides the internet. Note that some or none of this lifestyle change might have affected offending and crime rates.

The reason for revisiting the lifestyle hypothesis here is that our critic’s second main point appears to be to propose much the same thing while offering no additional evidence (there is a reference to a paper showing lifestyle change occurring well after the onset of the falls in crime). Using the term ‘cyberspace hypothesis’ they suggest lifestyle changes due to ‘leisure IT’ such as pre-internet computer gaming may have reduced physical crime rates. But this is not original, as shown above. Further, we think they misuse the term ‘cyberspace’, which usually refers to internet-related issues, particularly communication over computer networks. They give

it an unconventional definition that includes pre-internet ‘leisure IT’ (but, we note, the term is used elsewhere in their study as including internet-related activities). It could be argued that the choice of a term so similar to ‘cybercrime’, but assigning it a definition that involves an unusual and unclear usage, blurs definitional lines and introduces ambiguity.

Let us consider the lifestyle hypothesis further. Fifteen crime drop hypotheses were reviewed by Farrell (2013). Hypotheses were considered mostly because they had been the subject of previous empirical study. The reason that the lifestyle hypothesis was not among them, despite the author having discussed it previously (as shown above), was because there did not appear to be peer-reviewed supporting evidence. To our knowledge, that situation has not changed.¹ Let us consider the lifestyle hypothesis further using the ‘tests’ proposed in the 2013 and 2014 studies. The lifestyle hypothesis seems likely to fail the ‘varying trajectories test’ because lifestyle change seems unlikely to account for, say, how burglary appears to have fallen a decade or more in advance of violence in the United States. It also appears to fail the ‘phone theft test’, because it seems inconsistent with the increase in phone theft that occurred while other physical crimes were decreasing. In addition, lifestyle changes seem unlikely to explain key data signatures identified to date such as the decline in forced but not unforced entries to households as burglary declined (Tilley et al. 2015). Overall, then, while we are confident that non-criminal lifestyle changes occurred both before and in parallel with the rise of the internet, we suspect there is good reason that nobody has, to our knowledge, offered evidence showing they caused the international crime drop. We emphasize that showing lifestyles have changed, and even showing some correlation with crime trends, is a long way from demonstrating a causal connection.

Multi-causality, crime opportunities, and mechanisms

Our critics refer dismissively to a ‘so-called crime drop’. The crime drop provides the setting for their study, so this seems curiously self-contradictory. It also suggests they may not have considered previous discussions of variation in the crime drop and use of the term (e.g. that of Farrell et al. 2014).

Elsewhere M&M move to overtly criticize the security hypothesis by asserting that crime drop explanations should be multi-causal. It is our contention that

¹ Despite that, Farrell et al. (2014) included ‘the internet’ as a crime drop hypothesis in order to clarify its implausibility, while Farrell and Birks (2018) responded to mounting speculation about cybercrime.

the plausibility of an explanation should be determined not by a count of the number of hypotheses but by good theory and evidence. For example, the theory of evolution by natural selection is not inadequate because, by some definitions, it might be interpreted as lacking multi-causality. Likewise, the Big Bang explanation of the universe's formation is not usually viewed as inadequate on the basis that it may lack multi-causality. Perhaps it is also relevant to the present argument that a single term and theory can encapsulate multiple mechanisms and sub-hypotheses. With respect to the security hypothesis, different vehicle security devices trigger different mechanisms from each other and from anti-burglary devices, for example. That is, different security devices work in different ways in different contexts for different types of crime, following the reasoning of Pawson and Tilley (1997). Multiple other factors are involved: If door and windows locks reduced burglary, for instance, was this due to their increased prevalence, greater uniform coverage of access points (not just the front door), greater routine usage (windows no longer left open), secure defaults for modern locks, or the increased robustness of modern frames, panes, and security fittings (Farrell 2020)? These measures may have reduced offending through at least two causal mechanisms: by physically thwarting access, or by deterring offenders who observe the presence of credible security and choose not to offend (Thompson et al. 2018). With respect to the crime drop, an avalanche of security measures, introduced in many different areas of life, has been suggested to be responsible (Clarke 2016). Further, the debut crime hypothesis and keystone crime hypothesis, which were proposed alongside the security hypothesis by Farrell et al. (2011), operate as related but distinct hypotheses. There is some preliminary evidence in support of these hypotheses which suggest that violence fell as a knock-on outcome of declining property crime (Farrell et al. 2018), and significant potential for further research. So when M&M imply that the security hypothesis is mono-causal, we suggest they are mistaken. Of course, it is still possible that other factors also played a role in the crime drop, but this seems increasingly unlikely in the face of evidence supporting the security hypothesis, and largely refuting other hypotheses, that has emerged in recent years.

More generally, in places, our critics' work appears confused. Three prominent examples should illustrate. First, they make the "critical observation" that

"the impact of cybercrime on the physical crime drop is not necessarily associated with a shift in the activity of certain criminals but, rather, with a shift in criminal opportunities from physical space to cyberspace ... [which] ... has resulted in a new area of

criminal opportunity in cyberspace that has affected opportunities in physical space." (p. 3, emphasis added)

This seems to suggest that a crime opportunity is a physical entity that bounces around like a pinball. We suggest that a crime opportunity is any situation in which the perceived benefits outweigh the perceived costs of a criminal act. Second, they report that

"we are not claiming that the same individual who once stole bicycles now commits phishing (we ignore this, most likely that particular individual will not do so), but we do suggest that individuals who once found opportunities to steal bicycles now are finding more opportunities to commit fraud over the Internet through their daily activities (e.g., fraudulently offering bicycles that will never be sold to the buyer). Therefore, the point we are trying to make is not that people's skills have changed, but that global opportunities have." (p. 3)

This appears to argue that offenders who switch from physical crime to cybercrime do so without using different skills ('not that people's skills have changed'). If this interpretation is correct, it is hard to see how that could be

A possible alternative interpretation of the two examples so far is the following: *The crime drop and rising cybercrime are independent trends caused by broad changes to crime opportunity structures.* Again, though, this is our argument, and we took the italicized clause of the preceding sentence from the concluding paragraph of Farrell and Birks (2018).

Third, our critics report that "The mechanism [by which offenders substitute cybercrime for physical crime] is clearly evident: there are more opportunities in one place and fewer opportunities in another." The straightforward problem here is that this does not specify a mechanism by which one change may have caused the other.

Conclusion

The argument and evidence collated here suggests that our critics misrepresented our argument and do not appear to offer anything new. It is not without some reluctance that we reply here, feeling obliged to do so, in the hope of avoiding further misunderstanding.

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Authors' contributions

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