Media effects on public displays of brutality: the case of Mexico’s drug war

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ABSTRACT
This paper presents preliminary empirical evidence to show that media attention may influence public displays of brutality by Mexican drug cartels. We defined public displays of brutality as the presence of banners paired with corpses or dismembered bodies at unconcealed crime scenes. Using a data set of 857 such instances, we estimated reaction functions to determine whether public displays of brutality became more frequent when drug cartel violence was covered more by the press El Tiempo (1999). Our estimates show that public displays of brutality increase in a statistically significant way during the month following media coverage of similar crimes. We attribute this effect to changes in criminal strategy: increased brutality may be a way for criminals to more effectively deliver intimidating messages to their enemies. Whether increased displays of brutality also amount to increased crime rates, rather than merely increased visibility, is a question that remains to be studied.

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In the pioneering works of Dussich (1970) and Greene and Bynum (1982), and in recent literature such as Savage and Yancey (2008), Doley, Ferguson, and Surette (2013), Surette (2013) and Nix and Pickett (2017), media coverage has been found to influence many aspects of criminality and the justice system.

For example, media coverage directly influences individuals’ attitudes about potential criminals (Mancini and Shields 2014), fear of crime (Kort-Butler and Hartshorn 2011), and the propensity to report a crime (Estrada 2001). It also affects policing by inducing profiling (Graziano, Schuck, and Martin 2010), by changing perceptions about preferential treatment by the police (Dowler and Zawilski 2007), and by influencing attitudes and beliefs about the effectiveness of the police (Donovan and Klahm 2015). Moreover, media coverage seems to play a critical role in the justice system by changing expectations about the quality of crime scene investigations (Huey 2010), the decision-making process of judges (Hawkins and Scherr 2017), preferences about criminal sentencing (Rosenberger and Callanan 2011), beliefs about capital punishment (Lin and Phillips 2014), and even the probability that some criminals will be convicted (Leal, Gertz, and Piquero 2015).

Our paper contributes to this literature by exploring the relationship between media coverage and criminal behavior. Specifically, we examine the conditions under which
the media may influence the probability that Mexican drug cartels will publicly display brutality. In this way, our research also provides critical insights into the complicated relationship between freedom of the press and national security, prompting future scholarship to grapple in more depth with the trade-offs evident between these two desirable democratic principles.

Our results are based on a panel vector auto-regression (VAR) model. Using this method, we found that the relationship between public displays of brutality and media coverage is bidirectional, but also that media coverage has a stronger effect on public displays of brutality. We show that public displays of brutality increase in a statistically significant way when similar crimes have been covered in the previous month. We interpret these results to mean that publicity-seeking criminals may be more brazenly brutal if they expect that doing so ensures them a broader media platform to spread their messages. To be clear, our results do not show that they commit more acts of brutality, only that they display them more.

The rest of this paper is organized into four sections. The first section discusses the relevant literature in greater detail. The second section presents our dataset and empirical specifications. The third section explores and discusses our results, and then we conclude with the fourth section.

Public displays of brutality in the criminal world

It is well documented that Mexican drug traffickers use public banners, also known as “narco-messages,” to take credit for their crimes or to clarify their degree of responsibility for them (Campbell and Hansen 2014; Durán-Martínez 2015; Mendoza Rockwell 2016; Atuesta 2017; Phillips and Rios 2018). Narco-messages come in the form of flyers, signage, and even graffiti (Salopek 2011). They are used to express territorial control, intimidate rival gangs and policemen, or just to communicate with citizens about their activities (Martin 2012; Rios 2013). Public displays range from innocuous banners, such as “Long live the Juarez cartel, Culiacan Sinaloa is our territory,” to cruel displays of brutality featuring dismembered bodies holding banners reading “this [will] happen to those who dare to invade this place”.

Criminal messaging is also common in terrorism (e.g., Schmid and De Graaf (1982)). Some evidence shows that terrorists time their attacks so that they will be well-covered (Schmid 1989), run newspapers, radio stations, and websites (Hoffman, Shelton, and Cleven 2013), and are generally more motivated to act in areas where the press is at liberty to cover them (Eubank and Weinberg 1994; Drakos and Gofas 2006; Piazza 2008).

The literature on terrorism has extensively researched why terrorist groups publicly take credit for their violent actions. According to this literature, the act of publicly displaying a crime is more probable when criminal groups want to signal that they are more capable than rival criminal groups and law enforcement (Dolnik 2003; Lantz 2016), or want to communicate the strength and power of their organization (Gambetta 2009; Wright 2009). This means that reputation building is one of the most significant determinants of credit-taking (Crenshaw 1985; Bloom 2005; Siqueira 2005; Mendoza Rockwell 2016; Brown 2017). Another key finding is that competition among criminal groups makes credit-taking thrive (Hoffman 2010; Kearns, Conlon, and Young 2014; Durán-Martínez 2015; Phillips and Rios 2018) and encourages the use of more “shocking” crimes (Conrad and Greene 2015).
The institutional environment is also an important determinant. Democracies (Min 2013) with stronger enforcement powers (Hoffman 1997) that also refrain from endorsing criminal or terrorist organizations (Benjamin 2001) see much less credit-taking. Lastly, studies of the Taliban (Abrahms, Beauchamp, and Mroszczyk 2017) have shown that credit-taking happens less when citizens are targeted because indiscriminate violence may undermine the organization’s political goals (Abrahms and Conrad 2017). In sum, research on terrorism has shown that reputation building, competition among criminal groups, and the institutional environment are the most critical determinants of credit-taking.

Given the consistency of these results in the literature on terrorism, it is reasonable to suppose that those three determinants will also be important to understanding the behavior of Mexican drug cartels. However, unlike similar past studies, we explicitly examine the relationship between the media and public displays of brutality. Intuitively, it is easy to see how official mass media broadcasts could help cartels build their reputations and compete more effectively with their rivals. Thus, it makes sense that media coverage of narco-messages has detonated a large public debate. The media has long been harshly criticized for indirectly “promoting” drug cartels and their violent crimes (Martin 2012). Indeed, critics typically argue that media coverage of criminal messaging enhances the power of drug cartels by allowing them to spread fear and communicate with their enemies (Reyes 2011).

As a testament to the extent of public concern, during March of 2011, Mexico’s Ministry of Governance proposed the “Agreement on Media Coverage of Violence.” This pact was signed by 700 media outlets in Mexico who agreed to reduce coverage of crime perpetrated by drug trafficking organizations in hopes of thereby reducing cartel-related homicide rates (Philip and Berruecos 2012). The agreement was cheered by some, but many other people had serious misgivings. Some citizens worried about the implications that regulating coverage had for freedom of the press in Mexico, and they argued that being deprived of information about the criminal activities in their neighborhoods violated principles of democratic governance, such as having an informed electorate.

Similar cases have occurred in other developing countries. During the nineties, for example, the Colombian government convinced 27 top communication outlets to sign the “Discretion Agreement” and to reduce the coverage of violent paramilitary groups by appealing to the potential for violence reduction. Additionally, in 2010, Zimbabwe’s government attempted to regulate international news outlets and prevent negative media portrayals that might encourage violent uprisings against it (Surette and Gardiner-Bess 2013).

Academia has recently taken notice of this public debate and considers testing the assumption that media coverage influences the decisions of criminals to be one of the most challenging frontiers in social science (Surette 2013; Abrahms and Conrad 2017). The difficulty for researchers arises from the need to determine whether the relationship between media coverage and public displays of brutality could be bidirectional.

On one hand, public displays of brutality could influence media coverage because the media’s decision about what to publish rarely responds to a “normative consensus.” Instead, it typically responds to what reporters and editors feel is “newsworthy” (Nacos 2002; Hoffman, Shelton, and Cleven 2013; Coddington 2014; Fink and Schudson 2014). As Reiner and Newburn’s (2007) pioneering research on the topic explained, crime
reporters tend to develop a symbiotic relationship with the contacts and organizations they regularly cover. In the case of Mexico’s drug traffickers, for example, ghastly crimes such as beheadings, midday killings near a kindergarten, and crucifixions have resulted in newspapers and TV newscasts filled with increasingly shocking images and grim headlines.

On the other hand, media coverage could influence public displays of brutality because criminals sometimes seek to advance their objectives by claiming credit for crimes that were strategically designed to draw attention and to be fear-inducing, like terrorist attacks (Martin 1985; Hoffman, Shelton, and Cleven 2013; Asal and Hoffman 2016). Criminal organizations and gangs use publicity to build a reputation for being powerful, a critical requirement of success in an industry lacking full information and formal contract enforcement (Durán-Martínez 2015; Lantz 2016). When criminal groups have a fearsome reputation, citizens are more vulnerable to extortion and local authorities are more prone to corruption. Also, it deters the emergence of rival criminal groups, reduces desertion and disloyalty within the organization, and generates a sentiment of pride or belonging for organization members.

The reputation of criminals is further enhanced by media coverage because there is a positive and significant relationship between media consumption and citizens’ perceptions of security. Media coverage of terrorist attacks, for example, has been found to amplify terrorist activities beyond their true magnitude, strongly affecting how fearful citizens are (Ghetti 2008). In other words, overrepresentation of horrific or criminal incidents can change people’s perception, leading them to overestimate the frequency of crime and the danger that criminals pose to them (Heath and Gilbert 1996).1

The media may also encourage more instances of criminal activity by normalizing violence and by providing ideas to potential criminal copycats (Surette 2014). By the time the average child reaches age 18, it has been estimated that she or he would have been exposed to “some 18,000 murders and countless highly detailed incidents of robbery, burnings, shooting, beatings, forgery, smuggling and torture” (Sasson 1995). Arguably, crime becomes easier to perpetrate when, because of such exposure, it is not regarded as absolutely deviant conduct. Observing crimes has also been shown to prime individuals to have more aggressive thoughts and to exhibit more hostility (Ivory and Kaestle 2013; Surette 2013; Ferguson 2015). Indeed, well-known research has demonstrated that real crimes are sometimes copied after they have been depicted in the media (Gunter 2008). This effect may be particularly strong for predisposed individuals that might personally relate to the criminals portrayed in the media (Huesmann 1986; Huesmann et al. 2003; Huesmann and Taylor 2006).

Finally, press coverage could also influence the ways in which groups design their attacks (Crenshaw 1985) because terrorists understand that the media can potentially help them reach wider audiences (Weimann 2005; Martin 2012) and mediate their communications (Iqbal 2015). Indeed, terrorists’ manipulation and exploitation of the media is a critical part of their propaganda strategy (Schmid and De Graaf 1982; Wilkinson 1997). When the international press covers domestic terrorists, for example, they are less likely to launch cross-border attacks (Asal and Hoffman 2016), and when press attention increases, attacks may become up to twice as likely (Hoffman, Shelton, and Cleven 2013).

The preponderance of the evidence above supports our theory: that there could be a bidirectional relationship between the media and brutality. This research is important
because it concerns drug cartels whose activities are conducted at the US–Mexico border, and the security implications will be enduring and significant for both countries. Criminals may respond to media coverage by claiming credit for increasingly depraved crimes, and the media may respond to this by increasing the coverage of these kinds of crimes. The nature and strength of the relationship between these two variables have yet to be empirically examined. The contribution of this paper is to fill that gap, in the next two sections, we will describe our data and the empirical strategy that enabled us to do so.

Research design

We chose Mexico as our case study. We did so because addressing whether there may be a direct relationship between media coverage and criminal behavior in Mexico would greatly assist in the development of better strategies to curb criminal activities along the US–Mexico border. Another reason was that studying the public displays of brutality used by Mexican drug cartels allows us to understand credit-taking with sub-national diversity, an accomplishment only sometimes achieved by quantitative credit-taking research (e.g., Hoffman 2010).

Furthermore, drug cartels are a fascinating case because of their unique hybrid nature. They share the most important features of terrorist organizations (Brito and Intriligator 1992; Campbell 2014; Campbell and Hansen 2014; Phillips 2018) and of regular criminals (Rios 2014, 2015; Shirk and Wallman 2015; Holland and Rios 2017). This combination makes them ideal subjects for scholars wishing to speak to both the criminology and terrorist literature.

To empirically test whether the nature of the relationship between media coverage and cartel brutality is bidirectional, we follow the literature that has been developed to empirically test cycles (Jaeger 2008). Specifically, we developed a model based on empirical reaction functions for media coverage and credit-taking in the form of the following panel VAR:

$$A(L)Y_{it} = e_{it}$$

where \(Y_{it} = x_{it}z_{it}\) and \(e_{it}\) are structural shocks which are, by definition, uncorrelated with each other. The terms \(z\) ("exposed brutality") and \(x\) ("media coverage") are vectors of exogenous variables that may shift the reaction function up or down, and \(A(L)\) is a matrix lag polynomial of order

$$A(L) = I - A_1L - A_2L^2 + \ldots + A_pL^p$$

where \(A_1\) is:

$$A_1 = \begin{pmatrix} \beta_{11} & \beta_{12} \\ \beta_{21} & \beta_{22} \end{pmatrix}$$

"Media coverage" was measured by taking advantage of the sui generis way in which Mexican state authorities count homicides and by leveraging the separate count kept by the media. Mexico’s Ministry of the Interior keeps a database (fed monthly by criminal investigations conducted in each of the 32 state-level prosecutors’ offices) of murders committed by drug cartels. The dataset was publicly available from December of 2006 to
Meanwhile, in late 2007, the press began a large effort to cover every drug cartel homicide because of the high salience of the topic (Milenio 2017; Reforma 2017). We gained access to both the government and media counts of drug cartel homicides and compared them to create a proxy for how accurate media coverage was. The data are disaggregated for 32 states and over 169 weeks.

We define “media coverage” as a continuous variable that measures the number of homicides counted by Mexico’s government that were not covered by the press. When the difference between homicides counted by the government and those reported by the press is zero (or positive), we say the area is fully covered. When the difference is negative, this indicates that homicides are being under-covered.

“Exposure of brutality” was measured by compiling a list of the occurrences of narco-messages from across all 32 Mexican states during 2007–2010, giving us a total of 1731. We identified the state and week in which the banner was displayed and whether the banner was paired with a corpse or dismembered body. We found 857 banners with a corpse or dismembered body. We consider banners accompanied by a body to be significantly more brutal than those without. This database constitutes an invaluable source of information. As shown in Figure 1, banners have increased in number across the country, with some weeks having up to 50 banners with brutality.

We define “exposure of brutality” as the share of banners that were accompanied by a body, or part of one. The measure takes values from 0 to 1. Out of the total of 1731 narco-messages, 49.5% were accompanied by a body, or part of one.

Note that efficiency and consistency are achieved in our specification because all variables in the equations are lagged ($t-1$ or earlier), while the error term corresponds to time $t$, and because all variables on the right side of the equations are the same. This specification is advised to test whether two variables can be characterized as a cycle, or as a unidirectional effect. It also suits our purposes because we want to determine if media

![Figure 1](image-url)
coverage is reacting to past crime rates or to crime styles, and we do not need to solve for a dynamic equilibrium.

We complement our test with nonparametric impulse-reaction functions and forecast error in variance decomposition analysis for media coverage and cartel behavior (banner only, or a banner with a body). Our impulse-reaction functions describe how cartels react to media coverage, while holding all other shocks at zero, and vice versa. To accomplish this, as in Love and Zicchino (2006), we transform the system in a recursive vector autoregressor using a Cholesky decomposition of a variance–covariance matrix of residuals. To isolate the shocks, it is necessary to decompose the residuals of the model to make them orthogonal; thus, assuming that media coverage responds to brutality at time $t$, while brutality responds to media coverage with a lag.

**Results**

Table 1 presents the results of our general model for two reaction functions. Each function was estimated from a panel with four lags. The first column presents the impact of public displays of brutality on media coverage. The second column presents the impact of public displays of brutality on brutality.

These results support our hypothesis that the relationship between public displays of brutality and media coverage is bidirectional, yet they also show that the directionality of the effect is much stronger from media coverage to public displays of brutality than the other way around. Column 1 shows that media coverage is impacted by public displays of brutality in statistically significant ways for three weeks. Column 2 shows that public displays of brutality are impacted by media coverage in statistically significant ways for four weeks.

Figure 2 presents the impulse-reaction functions with 95% confidence bands for public displays of brutality and media coverage. For the impulse-reaction functions, we generated the 5% error band with a Monte-Carlo simulation of 1000 repetitions. The graphs for the impulse-reaction functions describe how public displays of brutality react to media coverage, while holding all other shocks at zero, and the other way around. Both the shocks and the impacts are presented as standard deviations.

When there is a shock in media coverage the number of public displays of brutality increases during the four weeks after. In other words, criminal organizations have more incentive to display brutality in the weeks following high media coverage. The fact that this effect is statistically significant means that the positive effect revealed by the data reflects a pattern, rather than just chance.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Media coverage</th>
<th>Exposure of brutality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media coverage (t-1)</td>
<td>0.0600</td>
<td>0.0021*</td>
</tr>
<tr>
<td>Media coverage (t-2)</td>
<td>-0.0169</td>
<td>0.0014*</td>
</tr>
<tr>
<td>Media coverage (t-3)</td>
<td>-0.0497</td>
<td>0.0020**</td>
</tr>
<tr>
<td>Media coverage (t-4)</td>
<td>-0.0696</td>
<td>0.0017*</td>
</tr>
<tr>
<td>Exposure of brutality (t-1)</td>
<td>-1.2504**</td>
<td>0.0869***</td>
</tr>
<tr>
<td>Exposure of brutality (t-2)</td>
<td>-1.0552*</td>
<td>0.1019***</td>
</tr>
<tr>
<td>Exposure of brutality (t-3)</td>
<td>-0.9733*</td>
<td>0.0479*</td>
</tr>
<tr>
<td>Exposure of brutality (t-4)</td>
<td>-0.8590</td>
<td>0.1037**</td>
</tr>
</tbody>
</table>

*p < 0.1; **p < 0.05; ***p < 0.01.
We can measure the magnitude of the effect with the forecast error variance decomposition. This measure is used to know how important each shock is to each variable in our equation. In this case, as much as 1.9% of the error in the forecast of brutality is explained by changes in media coverage.

The top-right corner shows that media coverage decreases for three weeks when there is a shock in public displays of brutality. This is consistent with research which has shown that the media may be hesitant to cover extremely brutal drug trafficking crime for fear of retaliation (Holland and Rios 2017). According to our results, as much as 0.6% of the error in the forecast of media coverage is explained by changes in displays of brutality.

Overall, our results suggest a world in which criminals tend to exhibit more brutality when the media has covered similar crimes in the past. We found that the share of banners paired with corpses or dismembered bodies can be predicted by past levels of media coverage. We also found that a predictive relationship holds from brutality to media coverage. In other words, these results do not mean that the crime rate increased, they only indicate that the use of brutality in crimes increased. These results speak directly to the power that media has to shape behavior at many levels of society.

**Conclusion**

This paper contributes to the literature concerning terrorism and crime by providing insight into the relationship between media coverage and public displays of brutality. Our findings and the literature we reviewed suggests that Mexican drug cartels have many possible incentives to seek publicity. They may change the style of their crimes, in this case by making them more visible and shocking, to get more attention and to spread their messages more effectively. They can hijack the media in this way because the media has proven incentives to give more airtime to stories about exceptional brutality.
Although we found no evidence that media coverage influenced crime rates, the ability of media coverage to spur on the increasingly shocking and horrific features of crimes does have important policy implications for both the US and Mexico. Given that drug trafficking cartels gain power through their infamy, policies aiming to reduce coverage still merit some consideration.

However, we must not neglect the important theoretical discussion about the trade-off between desirable democratic values that restricting coverage would entail. On the one hand, freedom of information and the press are essential to an informed and civicly engaged electorate. On the other hand, the severity and extent of the damage wreaked by organized criminals may be so great as to justify more restricted information in the name of national security.

The trade-off between security and other democratic values is in no way a novel subject; as in other policy areas, we must leverage the empirical evidence available to guide us as we grapple with this issue. More research is needed to either corroborate that crime rates are not affected, or to refute our findings, because filling the gap in this literature is critical to helping us navigate this trade-off and develop good public policy. Our contribution examining the case of Mexican drug cartels has been the first step in this direction, but much more work remains to be done.

Notes

1. It is interesting to note that, just as this literature would expect, there is less of an impact on those that trust the media less (Surette 2013, Boda 2011).

2. Drug cartel organizations, like terrorist groups, perform criminal activities for operational purposes (McCaffrey and Basso 2002; Makarenko 2004; Björnehed 2004) and use terror as part of their regular activities (Brito and Intriligator 1992; Phillips 2018). More specifically, Mexican drug cartels share at least three features with terrorist organizations: (1) they use violence to vie for regional political control, (2) violence is ordered by cartel leaders rather than spontaneously done by foot soldiers, and (3) violence is used as an “expansion strategy,” opening the possibility of engaging in other crimes (Campbell 2014; Campbell and Hansen 2014). As a result, the State Department has placed Mexican drug cartels on the list of Foreign Terrorist Organizations (Campbell and Hansen 2014).

3. Our research is relevant for two additional reasons. First, we focus on the study of actual violence, as opposed to fictional violent content in entertainment such as videogames. Many studies have focused on fictional portrayals of violence (e.g., Ferguson et al. 2008), or on testing for changes in tendencies toward aggression (e.g., Fink and Schudson 2014), but few have systematically explored non-fictional violence (Surette 2013). Second, we study violent behavior instead of aggression. Criminal justice scholars are generally interested in violent behavior that transcends normal aggression and causes illegal physical harm (Savage and Yancey 2008).

4. For a detailed description of how these classifications are made by Mexico’s government, see Molzahn, Rios, and Shirk (2012).

5. Our measure of press coverage avoids the common mistake of using press freedom as a proxy for press coverage (Hoffman, Shelton, and Cleven 2013). This means that instead of measuring media regulations, as was done in the past, we follow a more recent literature that measures media attention (An and Kwak 2017).

Disclosure statement

No potential conflict of interest was reported by the authors.
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