2018

Script Analysis of Open-air Drug Selling: A Systematic Social Observation of CCTV Footage

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Recommended Citation

Sytsma, V. and Piza, E. (2018). Script Analysis of Open-Air Drug Selling: A Systematic Social Observation of CCTV Footage. Journal of Research in Crime and Delinquency, 55(1): 78-102.

Article

Script Analysis of Open-air Drug Selling: A Systematic Social Observation of CCTV Footage

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Abstract

Objectives: Through the use of closed-circuit television (CCTV) video footage, the current study builds upon the drug transaction work of Piza and Sytsma by developing a crime script for open-air drug selling. *Methods:* Researchers conducted a systematic social observation of CCTV footage of open-air drug markets in Newark, NJ. The data were used to identify sequential stages of drug transactions. Fisher's exact tests measured whether buyer and seller activities during specific acts of the drug transaction event were related to activities seen in subsequent stages. *Results:* This study finds three distinct acts to open-air drug events. During the pretransaction act, one party (usually the buyer) initiates the transaction. There must then be an exchange of narcotics for money, which typically occurs in one simultaneous transfer and in one location. There is necessarily posttransaction mobility, with sellers most commonly maintaining their anchor

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point within the drug territory—particularly when the interactions are buyer initiated. *Conclusions:* Results of this study contribute to the crime script and situational crime prevention literatures by demonstrating acts inherent in public drug selling and by advocating for a focus on the post-transaction period and seller anchor points within drug markets through leveraging the sentinel role of police officers.

Introduction

Closed-circuit television (CCTV) camera footage can aid in the development of crime scripts by providing the researcher with a permanent record of crime-related activities, thereby improving the likelihood that clandestine behaviors are detected during data collection. In research focusing on the illicit narcotics trade, CCTV camera footage allows the researcher to circumvent many of the restrictions associated with acting as a complete observer within drug markets. Notably, a high volume of data can be collected using CCTV, giving researchers the ability to observe drug sellers for extended durations of time. In addition, the permanent visual record allows researchers to continuously revisit the footage to ensure accurate interpretation of suspect behaviors and to measure interrater reliability when multiple persons are involved in the coding. These benefits allow for the creation of detailed crime scripts that demonstrate how various actions within the drug market relate to one another, as sellers move through the drug transaction process.

The present study demonstrates how CCTV camera footage as a data source can be paired with systematic social observation (SSO) as a coding method to offer a permanent record of drug market actions and the high validity that comes with direct observation. This article develops a crime script for open-air drug selling for the time period during which the buyer and seller are within view of the camera. The drug-selling script is triangulated with the existing body of knowledge on drug transactions and policing (Jacques and Bernasco 2015; Nagin, Solow, and Lum 2015; Weisburd and Green 1995) to identify points in the open-air drug-selling process most amenable to drug market enforcement vis-à-vis a situational crime prevention (SCP) strategy. Specifically, through transcribing and coding

CCTV footage, Piza and Sytsma (2016) have shown that law enforcement should be mindful of how drug seller use of defensive strategies varies by context within identified hot spots. The crime script developed here builds upon the work of Piza and Sytsma by highlighting the importance of identifying the posttransaction period and drug seller anchor points within hot spots and increasing law enforcement presence at anchor points in a manner which is unpredictable to drug sellers.

Review of Relevant Literature

Script Analysis

Script analysis has its roots in cognitive science (Abelson 1976, 1981; Schank and Abelson 1977; Schank 1982). In the field of criminal justice, scripts map a series of incidents which taken together form a larger crime event (Leclerc and Wortley 2014). If the criminal event is successful multiple times by following a similar script, that script becomes the default sequence. When attempting to outline multiple sequential stages of a crime, the crime process may be divided into *acts* (Cornish 1994a)—for instance, the preparation period, the crime itself, and the getaway period may all be separate acts. Acts can include multiple *scenes*—such as a getaway act that includes meeting with an accomplice and traveling to a safe location with said accomplice (Cornish 1994b:155). SCP relies on the manipulation of the physical environment in order to increase the effort and risk required for crime commission and decrease crime opportunities and rewards (Clarke 1997; Cornish 1994b). However, because drug selling is often a very public crime, officials may face challenges in implementing environmental manipulations (e.g., through target hardening or access restriction) common in SCP strategies. In such cases, crime commission sequence manipulation may need to be used in lieu of said tactics (Cornish 1994b).

Crime scripts have emerged as a key analytical tool in SCP, with researchers developing scripts for a wide array of crime types (Beauregard et al. 2007; Brayley, Cockbain, and Laycock 2011; Chiu, Leclerc, and Townsley 2011; Clarke and Newman 2006; Hiropoulos et al. 2013; Jacques and Bernasco 2015; Leclerc, Wortley, and Smallbone 2011; Morselli and Roy 2008; Savona 2010; Savona, Giommoni, and Mancuso 2013; Smith and Cornish 2006). Jacques and Bernasco (2015) developed a script for drug selling, with a focus on sellers in Amsterdam's Red Light District. The authors found two conditions necessary for a drug transaction to take place: agreeing on the terms of the exchange and actually making the

exchange. They also found several "facilitating" conditions, which are not necessary, but increase the likelihood of a drug transaction taking place. These include locating a buyer, soliciting the buyer, coming to an agreement on where to complete the transaction, and going to that location.

CCTV and Scripts

In his 1994 piece on eliciting scripts, Cornish (1994a) discusses the methodological challenges of developing scripts using offender self-report. Cornish (1994a:39) compares "techniques which elicit scripts [to] techniques which may generate or construct them." By this, he is referring to the use of closed-ended self-reports to construct scripts that are based on existing frameworks, compared to research which is more exploratory in nature and relies on very little preexisting notions of the crime commission sequence. In Jacques and Bernasco's (2015) work, they supplemented drug seller self-report interviews with informal observations of the drug market. From these observations, they were able to glean valuable information on the locations and methods of solicitations and sales as well as the impact of formal social control on selling behaviors. However, even while acting as a complete observer, due to the clandestine nature of public drug selling, crucial aspects of the crime commission sequence can be absent from the data. Drug sellers wish to remain invisible to formal and informal social control because the role of the drug seller depends on it. This, coupled with subject access limitations, may leave researchers with an incomplete picture of public drug selling. For instance, Jacques and Bernasco (2015) were unable to develop a complete buyer portrait because they only had access to seller information save for survey questions on the seller's first most recent customer. In the absence of more detailed buyer information, Jacques and Bernasco (2015:124) state "it is difficult to pin down the sequence of drug dealing's general script because this offense requires coordination with other criminals—namely customers." Additionally, while Jacques and Bernasco (2015) explored the period immediately prior to the drug transaction, data on activities which took place following the transaction period, such as posttransaction mobility, were not available to them.

The use of CCTV camera footage as a data source, paired with SSO as a coding method, can strengthen the researcher's ability to develop detailed crime scripts of public drug selling. First, CCTV provides the high validity of direct observation, without the challenges of gaining access to difficult to reach subcultures. Second, because activities are caught on camera, researchers are afforded a "permanent visual record amenable to later

coding and reinterpretation based on emergent insights" (Sampson and Raudenbush 1999:605). Clandestine and easily missed behaviors may have a higher likelihood of detection when compared to observations done at the time of the incident. Furthermore, with access to a permanent record, the research team can be "in two places at once" which allows for more data on a large number of transactions—including data from prior to and immediately following transaction periods. For these reasons, preexisting CCTV camera footage, or footage that was not specifically recorded for the purpose of research, has been effectively used in criminological research in the past (Levine, Taylor, and Best 2011; Moeller 2016; Piza, Caplan, and Kennedy 2017; Piza and Sytsma 2016).

Scope of the Current Study

The current article contributes to the rapidly expanding literature on crime scripts by creating a drug-selling script of open-air drug selling in Newark, NJ. An open-air market refers to a publicly accessible, outdoor retail market open to any buyer (Hough and Natarajan 2000:4), hosting primarily small-scale transactions "between a seller and an ultimate consumer" (Eck 1995:69). In total, our script focuses on three main acts: pretransaction (the period immediately preceding the drug transaction), transaction (the period during which money and drugs are exchanged), and posttransaction (the period immediately following the exchange of drugs and money). We focus on these three acts, given their theoretical relevance in the rational choice and crime script literatures. Clarke and Cornish (1985) argue that scholars should consider criminal behavior as the outcome of offenders' broadly rational choices and decisions, which oftentimes must adhere to a precise order of sequential steps for crime commission to occur. In this vein, crime prevention policy succeeds when offender decision-making is influenced not at an aggregate level, but within specific instances relating to concrete crime opportunities, which Cusson (1993) referred to as "situational deterrence." We feel that breaking the script into the three aforementioned acts best reflects these propositions.

In coding behaviors across these temporal periods, our research has three primary aims. First, we identify the necessary steps involved in each scene. Second, we identify the typical conditions of each necessary step by measuring the frequency of participant behaviors. Third, through a series of Fisher's exact tests, we identify facilitating factors within each scene that are significantly associated with the typical conditions observed in the

subsequent scene. Cumulatively, these aims provide a script for drug selling within publicly accessible, open-air drug markets.

Methods

Data and Study Setting

Newark is the largest city in New Jersey, spanning over 26 square miles with an estimated 2015 population of 281,944 persons (U.S. Census Bureau 2015). In 2007, the city of Newark installed a public CCTV system, and the video surveillance unit (VSU) of the Newark Police Department (NPD) has responsibility for the day-to-day CCTV operations. Each time VSU monitoring activity generates probable cause leading to an arrest, video footage is saved on disk indefinitely. Footage disks are documented within VSU's video control ledger. From November 2007 through 2011, the time frame for which we had access to the data, the video control ledger included 1,667 disks. Researchers reviewed the ledger and identified all incidents identified as "drug distribution" that resulted in an arrest for inclusion in this study. In total, 200 cases fit the selection criteria. Due to resource constraints, we focused on the 62 incidents occurring in 2011.

Transcription, Coding, and Analysis

While the continuous footage on a disk was considered a single incident by the NPD, numerous transactions were often captured within one incident. Across the 62 incidents, we observed 98 transaction events, which we incorporated as the unit of analysis. For each of these transactions, we recorded several setting and demographic variables, including the race, gender, and age of the buyers and sellers, and whether or not the seller was in the presence of others during the pretransaction act. We also recorded the time of day by daytime and evening, with evening being any time after sunset when offenders were afforded the cover of darkness. As per NPD policy, CCTV operators focus closely on individuals in suspected drug transactions for the purpose of identifying the possession and exchange of drugs and money. This operator activity combined with the telescopic quality of the cameras allowed for in-depth observation of the incidents, which enabled us to readily identify objects in the video as packages of drugs or money. The footage was in a proprietary format, unable to be inputted into any third-party software for coding. Therefore, detailed transcriptions using SSO were created for each incident. First advanced by Reiss (1968, 1971), SSO involves the observation of social phenomena in

a systematic, replicable manner, involving a means of observation that is independent of the phenomena being observed. SSO is especially well suited to situations "where all of the relevant actors and events . . . can be observed from start to finish in a limited, well-defined time period" (Mastrofski, Parks, and McClusky 2010:228). Street-level drug sales, as recorded by CCTV operators, are well suited for SSO.

At this point we find it important to discuss what is not captured in our coding schema. Our observations are restricted to participant behaviors occurring within the geography of the drug market. Any activities conducted in preparation of the transaction, such as coordinating a meeting time via telephone or circling the block to check for the presence of police officers, are not captured within CCTV footage. Future research can overcome this limitation by incorporating additional data sources, such as interviews with offenders, to measure pretransaction activity occurring outside of the drug market. However, we feel this limitation is offset by the level of detail captured within the footage.

Transcription and coding for this research was done in two stages. Footage of all drug markets was transcribed, with transcriptions organized by 1-minute intervals. Behaviors of all actors observed within each time interval were described in detail. Following this, key variables of interest were coded in the QSR NVivo 10 software package. We began by coding activity occurring during the transaction period (i.e., the exchange of drugs and money). After coder training, the primary author led the data coding efforts. While the intent was for one researcher to code all footage to maximize reliability, the secondary author did transcribe and code 19 percent of incidents. Interrater reliability was therefore tested in a manner similar to that of Rosenfeld, Bray, and Egley (1999), with 25 percent of the cases coded by the secondary author also coded independently by the primary author. Coders were in agreement an average of 97.6 percent of the time across all attributes under study, with a mean k coefficient of .85, which is considered substantial in the literature (see Landis and Koch 1977 for a general guideline to interpreting k values).

Following the coding of transaction-related variables, we coded drug market participant behaviors in the time frames immediately preceding and following the transaction. During this second stage of coding, the employed strategy differed from that of the first in an effort to increase consistency in the coding process. Specifically, a single researcher was hired and trained in footage coding. This researcher coded all footage for each of the 98 cases included in this analysis. Having a single researcher handle the entirety of

coding controlled against unreliability generated by differing interpretations of multiple researchers.

Through coding of time periods preceding and following the drug transaction, the various acts of each event (and scenes within acts) were identified. Buyer and seller activities and demographic and setting variables observed within identified acts were analyzed. The demographic and setting variables provide situational information to aid in the development of environmental or setting manipulation tactics consistent with traditional SCP strategies (Cornish 1994b). The addition of behaviors at various stages informs SCP tactics by providing a means to identify when in the crime commission process an intervention may fit if environmental manipulation is not possible. Given the qualitative nature of the data and the lack of statistical power due to small cell sizes, statistical significance and strength of association were measured using Fisher's exact and Cramer's V, respectively. This was done in an effort to link the various acts or scenes, and behaviors within, without needing to rely on techniques requiring greater statistical power.

Results

Pretransaction Act

The pretransaction act consists of the time period in which activities take place within the drug market immediately leading up to but not including the drug transaction. The following is an example of the demarcation between the pretransaction period and the transaction period:

> *Pretransaction period 2:29 p.m.*: Male A is standing at the top of the steps eating something. Male B is sitting at the top of the steps. Male C is currently walking out of the gate away from the porch area. Male D [seller] is standing on the left side of the porch, leaning on the hand rail. Male C walks across the street out of camera view. Male D then walks out of the gate and away from the house toward the residences left of the home. Male D stops next to a large bush and bends over. He appears to pick something up from the bush; at this time, previously unseen male (male E [buyer], older, early 30s) is walking up toward the house and male D.
>
> *Transaction period 2:30 p.m.*: Male D hands something to male E in exchange for what appears to be money. Male E immediately walks away. Male E returns quickly and meets male D again near the corner. Male E hands something to male D.

Data indicate the pretransaction act consists of two main steps: an initiation scene and an inspection scene. In the initiation scene, the buyer and seller establish contact for the first time in preparation for the transaction. We found that the buyer-initiated contact most frequently ($n = 56$) and more than twice as often as sellers initiated transactions ($n = 22$). In 20 instances, the initiator was unknown because the camera operator began observing the event after the buyer and seller established contact.[1] We measured the effect of setting (time of day and whether the seller was in presence of others) as well as the demographic profiles (race, gender, and age) of the buyer and seller (see Table 1) through a series of Fisher's exact tests. We found that the time of day was significantly related to the occurrence of buyer-initiated transactions. The relationship between daytime hours and initiation is significant and moderate ($V = .25$). In particular, the observed occurrence of buyer-initiated transactions during the daytime ($n = 30$) is higher than what would be expected by chance ($n = 25.7$). Conversely, the observed frequency of seller-initiated transactions in the daytime was about half of the expected frequency (5 vs. 10.1). Hence daytime is a facilitating factor of the typical condition (i.e., buyer-initiated transactions), while events going off-script (i.e., a seller acts as initiator) was most often observed during evening hours.

Seller age was also significantly related to initiation with a moderate effect size ($V = .33$). The typical condition of buyer-initiated transactions was most often observed when sellers were between their late teens and early 20s. For this age-group, observed seller-initiated transactions ($n = 5$) were about half of the expected frequency ($n = 10.1$). The off-script condition of seller initiations was most commonly observed with sellers between their mid-20s and early 30s ($n = 13$ compared to an expected count of 8.5).

Following the initiation, the buyer has the opportunity to inspect the product closely prior to engaging in the transaction. This includes actions such as opening up a sealed package and peering inside, holding a sealed package up to the light in an effort to see inside, or holding a package up to one's face as if to smell it or scrutinize it in some way. We found that buyers most often opted not to inspect drug packages, with buyers inspecting the product in only 19 of the 98 events. To test how this is influenced by the prior step, we conducted Fisher's exact tests measuring the influence of initiation type (seller initiated vs. buyer initiated) on the decision to inspect drugs prior to purchase. The findings of this model did not achieve statistical significance (see Table 2). Thus, while we identified the typical condition as no inspection, we were not able to identify any facilitating factors.

Table 1. Fisher's Exact Test Findings: Pretransaction Act and Initiation Scene.

		Setting				
		Time of Day			Seller in Presence of Others	
Initiation	N	Daytime	Evening	N	No	Yes
Seller initiated	22	5 (10.1)	17 (11.9)	22	6 (5.2)	16 (16.8)
Buyer initiated	56	30 (25.7)	26 (30.3)	56	9 (13.1)	47 (42.9)
Unknown	20	10 (9.2)	10 (10.8)	20	8 (4.7)	12 (15.3)
Total	98	45	53	98	23	75
p		.04*			.09	
V		.25			.22	

		Buyer Profile				
		Buyer Race			Buyer Gender	
Initiation	N	White	Black	N	Female	Male
Seller initiated	21	3 (3.5)	18 (17.5)	21	3 (3.3)	18 (17.7)
Buyer initiated	52	9 (8.6)	43 (43.4)	56	10 (8.8)	46 (47.3)
Unknown	18	3 (3)	15 (15)	19	2 (3.0)	17 (16)
Total	91	15	76	96	15	81
p		1.00			.86	
V		.03			.08	

(continued)

Table 1. (continued)

		Buyer Age					
Initiation	N	Early Teens	Late Teens to Early 20s	Mid-20s to Early 30s	Mid-30s to Early 40s	Mid-40s to Early 50s	≥Mid-50s
Seller initiated	21	0 (.2)	3 (5.2)	5 (5.2)	6 (5.4)	6 (4.5)	1 (.5)
Buyer initiated	53	0 (.6)	16 (13.1)	12 (13.1)	12 (13.7)	12 (11.4)	1 (1.1)
Unknown	19	1 (.2)	4 (4.7)	6 (4.7)	6 (4.9)	2 (4.1)	0 (.4)
Total	93	1	23	23	24	20	2
p				.55			
V				.22			

Seller Profile

		Seller Gender	
Initiation	N	Female	Male
Seller initiated	22	2 (1.6)	20 (20.4)
Buyer initiated	56	4 (4)	52 (52)
Unknown	20	1 (1.4)	19 (18.6)
Total	98	7	91
p		1.00	
V		.05	

Table 1. (continued)

				Seller Age			
Initiation	N	Early Teens	Late Teens to Early 20s	Mid-20s to Early 30s	Mid-30s to Early 40s	Mid-40s to Early 50s	≥Mid-50s
Seller initiated	22	0 (.4)	5 (10.1)	13 (8.5)	3 (1.8)	0 (.9)	1 (.2)
Buyer initiated	56	1 (1.1)	32 (25.7)	14 (21.7)	5 (4.6)	4 (2.3)	0 (.6)
Unknown	20	1 (.4)	8 (9.2)	11 (7.8)	0 (1.6)	0 (.8)	0 (.2)
Total	98	2	45	38	8	4	1
p				.01*			
V				.33			

Note: Expected frequencies are given in parentheses; seller profile does not include seller race because all sellers were Black.
*p < .05.

Table 2. Fisher's Exact Test Findings: Pretransaction Act and Buyer Inspection Scene.

		Initiation		
Buyer Inspection	*N*	Seller Initiated	Buyer Initiated	Unknown
No	79	16 (17.7)	46 (45.1)	17 (16.1)
Yes	19	6 (4.3)	10 (10.9)	3 (3.9)
Total	98	22	56	20
p			.57	
V			.11	

Note: Expected frequencies are given in parentheses.

Transaction Act

The transaction act is the period during which sellers and buyers interact for the purpose of exchanging drugs and money. Our data identified a single scene within the transaction act—the transaction or exchange itself. The exchange can be characterized by order and speed and by transaction mobility. Order refers to which good is initially provided, with either money or drugs being surrendered first. The speed of the transaction is coded as delayed, immediate, or simultaneous. Delayed transactions are those in which the initial passing of drugs or money is not immediately followed by the reciprocal exchange of drugs or money. Transactions in which the exchange occurred absent any such delay are coded as immediate. Cases are considered simultaneous when the exchange is completed immediately and in one fluid motion, similar to a handshake. Transaction mobility refers to the various locations at which stages of the transaction took place relative to the initiation scene location of the pretransaction act. Transaction mobility can be broken down into the greeting between the seller and buyer that occurred during the initiation scene and the exchange of money and drugs during the transaction act. In total, four different combinations were observed: the greeting, money exchange, and drug exchange occurring at the same place (G1, M1, and D1); the greeting and money exchange occurring at the same place with the drug exchange occurring at a different place (G1, M1, and D2); the greeting occurring at one place and the money and drug exchanges occurring simultaneously at a different place (G1, M2, and D2); and the greeting, money exchange, and drug exchange each occurring at a unique place (G1, M2, and D3).

We found simultaneous exchanges to be the typical condition in the transaction act ($n = 33$), followed by narcotics first and immediate ($n = 18$), money first and immediate ($n = 17$), and money first and delayed ($n = 11$). Cases may also be characterized as completed (money was successfully exchanged for drugs) or noncompleted (one party attempts an exchange, but ultimately, there is no reciprocal giving and taking because either the seller or the buyer has backed out). Of the 98 transactions, only 5 were noncompleted. This low number is not surprising, given that drug distribution resulting in an arrest was a criterion for study inclusion; thus in all cases, video footage containing noncompleted transactions was part of a larger incident that also included a completed transaction (see Piza and Sytsma 2016:43-44). Nonetheless, we believe it to be worthwhile to explore the noncompleted cases, given the paucity of data available to researchers depicting such a phenomenon.

Table 3 displays results of Fisher's exact tests exploring the influence of pretransaction activities on the transaction act. Both initiation and inspection were significantly related to the method of exchange, with moderate effect sizes observed in both instances ($V = .34$ and $V = .49$, respectively). Buyer-initiated transactions were most likely to be simultaneous ($n = 19$) or money first and immediate ($n = 15$). While the observed frequency of simultaneous exchanges was close to the expected frequency (19.1), the observed frequency of money first and immediate exchanges was higher than the expected (9.8). Therefore, buyer-initiated events seem to facilitate money first and immediate exchanges more than the typical condition of simultaneous exchanges. Interestingly, seller-initiated transaction—the primary off-script condition of the pretransaction act—was associated with an observed frequency of narcotics first immediate exchanges ($n = 9$) that more than doubled its expected frequency ($n = 4.2$). The pretransaction act's typical condition of no inspection was associated with higher than expected frequencies of simultaneous, narcotics first and immediate, and money first and immediate exchanges. Also of note is the finding that the off-script condition of buyers inspecting drugs was associated with four of the five noncompleted transactions. This suggests that information gained by inspecting drug packages may have led buyers to back out in certain cases. In addition, inspection was associated with an observed frequency of delayed narcotics first transactions ($n = 4$) that was nearly four times higher than the expected frequency ($n = 1.3$). This further suggests that buyers who took time to inspect drug packages may have proceeded with caution even when they opted against entirely backing out of the transaction.

Table 3. Fisher's Exact Test Findings: Transaction Act; Exchange Scene.

		Initiation				Inspection	
Exchange	N	Seller Initiated	Buyer Initiated	Unknown	N	No	Yes
Noncompleted	5	1 (1.2)	4 (2.9)	0 (0.9)	5	1 (4.1)	4 (.9)
Money, delayed	11	2 (2.5)	6 (6.4)	3 (2.1)	11	9 (8.9)	2 (2.1)
Money, immediate	17	1 (3.9)	15 (9.8)	1 (3.2)	17	16 (13.8)	1 (3.2)
Narcotics, delayed	7	3 (1.6)	2 (4.1)	2 (1.3)	7	3 (5.7)	4 (1.3)
Narcotics, immediate	18	9 (4.2)	7 (10.4)	2 (3.4)	18	16 (14.6)	2 (3.4)
Unknown, delayed	4	0 (0.9)	2 (2.3)	2 (0.8)	4	3 (3.2)	1 (.8)
Simultaneous	33	6 (7.6)	19 (19.1)	8 (6.3)	33	29 (26.7)	4 (6.3)
Total	95	22	55	18	95	77	18
p			.03*			.00**	
V			.34			.49	

		Initiation				Inspection	
Transaction Mobility	N	Seller Initiated	Buyer Initiated	Unknown	N	No	Yes
Noncompleted	5	1 (1)	4 (2.9)	0 (1)	5	1 (4)	4 (1)
G1, M1, D1	64	13.3 (13.3)	38 (37.3)	13 (13.3)	64	57 (51.3)	7 (12.7)
G1, M1, D2	3	0 (0.6)	3 (1.8)	0 (0.6)	3	2 (2.4)	1 (0.6)
G1, M2, D1	1	0 (0.2)	0 (0.6)	1 (0.2)	1	1 (0.8)	0 (0.2)
G1, M2, D2	18	6 (3.8)	8 (10.5)	4 (3.8)	18	11 (14.4)	7 (3.6)
G1, M2, D3	5	0 (1)	3 (2.9)	2 (1)	5	5 (4)	0 (1)
Total	96	20	56	20	96	77	19
p			.47			.00**	
V			.24			.46	

Note: Expected frequencies are given in parentheses.
*p < .05. **p < .01.

Of the 91 cases, where transaction mobility is known and the transaction was completed, the typical mobility condition is for greetings, money exchanges, and drug exchanges to all take place at the same location ($n = 64$). It was not uncommon for greetings to take place at one location and for the money and drug exchanges to take place at a second location ($n = 18$). While we were not able to identify any facilitating factors related to initiation, noninspection events seem to facilitate a lack of transaction mobility ($V = .46$). There were 57 such cases.

Posttransaction Act

The posttransaction act refers to the immediate aftermath of the drug transaction and begins immediately after the second of either narcotics or money is passed between parties or after the rejection occurs in a noncompleted transaction. In cases where there are multiple transaction events per incident, there is always a natural break between the posttransaction act and what would then be the start of the next pretransaction period.[2] As with the transaction act, the posttransaction act includes only one observable scene: posttransaction seller mobility. Posttransaction mobility includes bill laundering ($n = 15$), which refers to entering a place of business for the purpose of trading money for goods. Some sellers might be concerned with police tracking a number of bills within circulation. As such, spending a portion of proceeds immediately after acquiring it may be a tactic to divest oneself of marked bills. Sellers also often move to a new anchor point but remain within the same drug territory ($n = 19$), and some leave the drug territory altogether ($n = 12$). Mobility also includes a lack thereof, which was identified as the typical condition in the posttransaction scene: sellers most often maintain their current anchor point—elect to remain fixed in one place—following a drug transaction ($n = 52$).

   Table 4 displays results of Fisher's exact tests exploring the influence of prior activities on the posttransaction act. Posttransaction mobility has a significant and moderate ($V = .25$) relationship with initiation, with buyer-initiated interactions being most likely to end in a maintenance of anchor point ($n = 35$). This makes intuitive sense, and a seller approached by a buyer would likely want to stay in the same spot in order to be easily found by other potential buyers. Conversely, seller-initiated events had a "leave territory" frequency ($n = 6$) more than double the expected frequency (2.7). In such cases, sellers may feel their conspicuous solicitation of buyers may have made them visible to authorities, so leaving the territory (at least temporarily) may allow them to escape the gaze of potential onlookers.

Summary of Results: A Typical Open-air Drug-Selling Script

Based on the three acts discussed above, necessary steps for the drug sale event to occur and conditions that are typical to each step (similar to Jacques and Bernasco's [2015:124-25] notion of the "facilitating" or "best fit script") are identified in Figure 1. First, it is necessary for one party to approach another to initiate the transaction during the pretransaction act. The typical condition for this step is for the buyer to initiate the transaction

Table 4. Fisher's Exact Test Findings: Posttransaction Act and Mobility Scene.

Post-transaction Mobility	Initiation				Inspection		
	N	Seller Initiated	Buyer Initiated	Unknown	N	No	Yes
Bill laundering	15	5 (3.4)	8 (8.6)	2 (3.1)	15	15 (12.1)	0 (2.9)
Leave territory	12	6 (2.7)	4 (6.9)	2 (2.4)	12	9 (9.7)	3 (2.3)
Maintain anchor	52	5 (11.7)	35 (29.7)	12 (10.6)	52	42 (41.9)	10 (10.1)
New anchor	19	6 (4.3)	9 (10.9)	4 (3.9)	19	13 (15.3)	6 (3.7)
Total	98	22	56	20	98	79	19
p			.04*			.09	
V			.25			.24	

Posttransaction Mobility	Exchange							
	N	Noncom	Mon, Del	Mon, Imm	Narc, Del	Narc, Imm	Unk, Del	Sim
Bill laundering	15	0 (.8)	5 (1.7)	2 (2.7)	1 (1.1)	4 (2.8)	1 (.6)	2 (5.2)
Leave territory	12	2 (.6)	1 (1.4)	2 (2.1)	1 (.9)	2 (2.3)	0 (.5)	4 (4.2)
Maintain anchor	49	3 (2.6)	2 (5.7)	10 (8.8)	3 (3.6)	8 (9.3)	3 (2.1)	20 (17)
New anchor	19	0 (1)	3 (2.2)	3 (3.4)	2 (1.4)	4 (3.6)	0 (.8)	7 (6.6)
Total	95	5	11	17	7	18	4	33
p					.37			
V					.26			

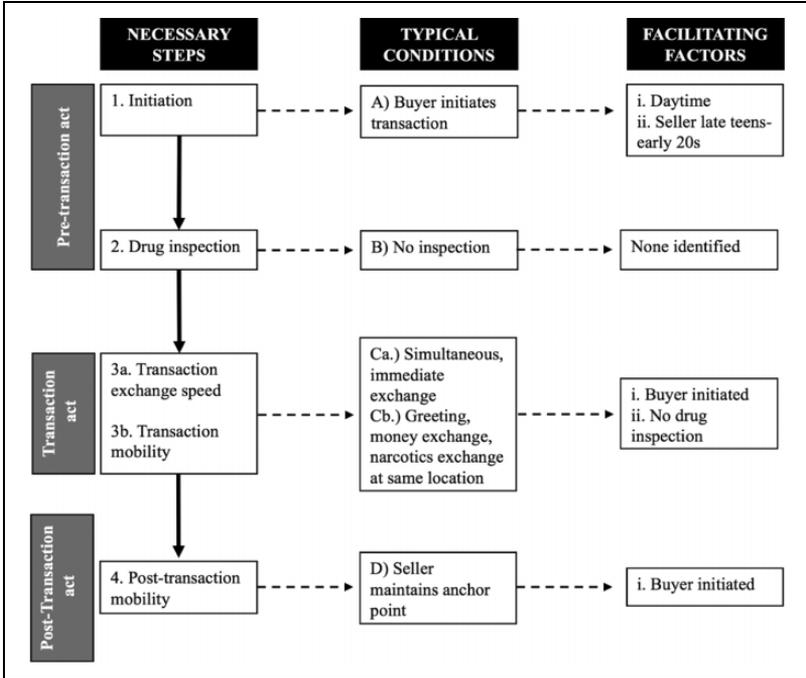*Note:* Expected frequencies are given in parentheses.
*p < .05.

Figure 1. Necessary steps, typical conditions, and facilitating factors.

rather than for the seller to solicit customers. This typical condition is facilitated during daytime hours and with sellers being aged late teens to early 20s. During the pretransaction act, buyers typically do not take the time to inspect drug packages before engaging in the transaction. No significant facilitating factors of this typical condition were identified. Second, during the transaction act, it is necessary for there to be an exchange of narcotics for money, and typically, this occurs in one simultaneous and immediate transfer (similar to a handshake). This typical condition is facilitated when buyers initiate the transaction and when no drug inspection occurs on the part of the buyer. It is also necessary for the transaction to occur in a particular location. Typically, the greeting from the pretransaction act, the exchange of money, and the exchange of drugs all occur at the same location. This typical condition is facilitated when no drug inspection occurs. Third, there must be some form of posttransaction mobility, with sellers most typically electing to maintain their anchor point within the drug territory. This typical condition is facilitated by buyer initiation.

Discussion and Conclusion

This study aimed to identify the typical conditions of each necessary step and to identify facilitating factors within each scene that are significantly associated with the typical conditions observed in the subsequent scene. Findings suggest that buyers are most likely to initiate interactions, and sellers are most likely to maintain a fixed position within the drug territory. This is consistent with the findings of Weisburd and Green (1995) who assert that dealers tend to adopt a principal area of sales and avoid straying from that area (see also Weisburd et al. 2006). Most of the narcotics hot spots identified in Weisburd and Green's (1995) research composed of fewer than four street segments/intersections, and a large number of hot spots consisted of only one street segment/intersection. Our study suggests that drug sellers occupy activity spaces even more constricted than such microplaces typically analyzed in place-based policing studies. Based upon our observation of CCTV footage, drug sellers typically did not utilize street segments and intersections in their entirety but remained affixed to specific anchor points within the microunit such as a bus stop, building vestibule, or particular business. Given this observation, drug activity is not just concentrated at the microlevel, but at precise places that comprise these microunits. This may be an indication that sellers are not required to aggressively solicit buyers because buyers can be confident in where to locate sellers should they be interested in making a purchase. Harocopos and Hough (2011) found that buyers patron sellers who are known to them to avoid being taken advantage of or buying from undercover police; thus, it seems sellers need to remain static, so that their regular clients know where to find them. Jacques and Bernasco (2015:127) call this standing still to increase "the chance of crossing paths" with a buyer; however, the sellers in their study were more likely to remain mobile in search of customers to avoid police attention.

These findings suggest that anchor points should be identified within drug hot spots, similar to the stepwise approach advocated by Weisburd and Green (1995). This can be done through the use of CCTV camera footage, as police reports or arrest records may not explicitly indicate the location at a precise microlevel such as a corner (Jacques and Bernasco 2015:136). In intervening at the microlevel, social context should also be considered. Law enforcement may identify community "assets" (such as business owners, community groups/agencies, and residents at anchor points) and "liabilities" to determine appropriate place-based responses, including the formation of "police-community problem-solving partnerships" (Weisburd,

Davis, and Gill 2015:269). Law enforcement should also account for diversity in defensive actions used by sellers, environmental context, and intensity of drug activities at micro-level places (Jacques and Bernasco 2015:136; Piza and Sytsma 2016; Weisburd and Green 1995).

Piza and Sytsma (2016) found the street-level drug markets in Newark to be fast-paced in nature, with sellers generally working alone and the use of stash spots being restricted to residential areas. The current work demonstrates that transactions are very much buyer-led, with interactions being buyer-initiated, and either money-first (again the buyer tends to act first) or simultaneous. Transactions are rarely delayed and, much like in Jacques and Bernasco's (2015) work, the entire transaction generally takes place in one location. Given this fast-paced, buyer-led market, it is during the posttransaction act that sellers have some downtime, and interventions should take place during this time. By specifically directing crime prevention efforts toward anchor points, officers can play what Nagin et al. (2015:78) refer to as a "sentinel" role. In such a strategy, aggressive arrests may not be necessary, as the mere presence of law enforcement can prevent crime due to the credibility that was built up during the implementation stage (Nagin et al. 2015; Weisburd and Green 1995).

By adopting a sentinel role and forcing drug sellers to constantly change anchor points' posttransaction, police may disrupt drug markets by preventing buyers from easily locating sellers. Moeller (2016:37) terms this "post-crackdown residual deterrence." The hope is that buyers will avoid the area, and sellers may scatter, making it difficult for buyers to locate new markets. Weisburd et al. (2006) have demonstrated that there is typically no displacement of disrupted drug markets because buyers tend to visit one specific seller out of trust. Further, when sellers are pushed out of an area, they often will not set up shop somewhere new due to the stress, effort, and risk (from both police and established drug sellers in new areas) involved in starting over again in a new locale.

Despite the implications of the current study, like most others, it suffers from limitations that warrant mentioning. CCTV as a data source has limitations that have been mentioned elsewhere (see Piza and Sytsma 2016). Specifically, the cameras only provide visual data, leaving audio of buyer and seller dialogue absent from analysis. Because verbal codes of drug market participants have been seen as key to the operation of illicit drug markets (specifically to avoid detection and apprehension: Jacobs 1993; Jacques and Reynald 2012), audio data would likely complement the video footage. The script created here is also limited in scope. It is possible and even likely that the script could extend back to preparation activities that

took place anywhere from a few minutes prior to entering the view of the camera to several weeks or years. It is also possible that the threat of enforcement related to CCTV may influence the actions of offenders, thereby negatively influencing the validly of the analysis—although Gill and Loveday (2003) have shown that the majority of sellers consider CCTV to be ill-equipped to disrupt the drug trade.

Additionally, we were unable to measure many aspects of drug market diversity. For example, specific characteristics of drug markets (such as type of drug sold) may impact the processes undertaken by drug sellers and buyers. Unfortunately, we did not have access to data that would allow us to speak to the heterogeneity of the individual drug markets. Further, we were restricted to using Fisher's exact test in the statistical analysis due to small cell sizes. While using a technique that can predict a subsequent act based on the preceding act (e.g., regression modeling) would have been optimal, this was not possible. Small sample size also influenced our decision to create a script based on "central tendency" rather than focusing on variation in drug selling. We lacked the statistical power to make reliable conclusions on any one subgroup typology. For example, if we were to attempt to specify the nature of a drug-selling typology in a mixed/residential setting rather than a commercial setting, we would be doing so based on n of 42. In a cross-tabulation, for instance, those 42 cases would be distributed among 4 posttransaction mobility attributes and 7 possible exchange actions, resulting in very few cases within each cell. Furthermore, by creating an open-air drug-selling script based on typical actions, we are able to inform policy at a generalized rather than more specific level. As such, law enforcement may be better able to adapt our recommendations to suit their needs.

Despite these limitations, we feel this study demonstrates how CCTV footage can be triangulated with SSO and the existing body of knowledge to develop a script and identify logical intervention points for criminal justice practitioners seeking guidance on disrupting open-air drug markets. In our view, the next step in script development is to bring the focus away from typical actions and, with the help of larger sample sizes, place the spotlight on the variation seen among sellers in open-air drug markets to create script typologies. We strongly recommend that criminologists continue to build upon this body of research.

Declaration of Conflicting Interests

Funding

Notes

1. A common reason for missing data on other variables such as buyer race and exchange order/speed is that some transactions occurred within a vehicle.
2. The following is an example of the demarcation between a posttransaction period and the beginning of a new pretransaction period: *Posttransaction period*: Male E [seller] walks the North on broad street and then turns onto market street (walks out of camera view). *2:50 p.m.*: Operator pans the area. Several seconds pass without incident. *2:51 to 2:59 p.m.*: Operator continues to pan the area, focusing on random individuals momentarily. Then the operator continues to pan. *Pretransaction period 3:00 p.m.*: After several minutes of panning, male E reappears in camera view. Male E is immediately approached by male F (new buyer).

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