SHADY CHARACTERS: THE IMPLICATIONS OF ILLICIT ORGANIZATIONAL ROLES FOR RESILIENT TEAM PERFORMANCE

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Abstract

In this paper we theorize about illicit roles and explore their effects on resilient team performance. We define an illicit role as one whose occupants specialize in activity forbidden by the law, regulatory bodies, or professional societies, in the belief that doing so provides a competitive advantage. Using longitudinal data on professional hockey teams, we examine the enforcer – a player who specializes in the prohibited activity of fighting. We find that team performance is more disrupted by the injury of an enforcer than by the injury of occupants of other formal roles on the team. In addition, team performance recovers more slowly after this setback to the extent the team tries to replace an enforcer, and the performance disruptions associated with his exit are magnified as a function of his experience with his team. We use these findings to develop new theory about organizational roles that operate outside official channels and formal structures. We suggest that such role occupants are more difficult to replace than their formal counterparts, in part because to enact these roles effectively requires experience in the local social context.

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In the film *Michael Clayton*, George Clooney plays a lawyer who spends his time on activities that further the firm's interests but are prohibited, underhanded or outside the bounds of the law. He elicits preferential treatment from INS agents and negotiates surreptitiously with prosecutors as a representative of the defense, actions that could trigger formal sanctions or disbarment if discovered. Other lawyers at the firm have official roles indicated by rank (associate, partner) and domain (family law, litigation), and though his colleagues are aware of what Clayton does, he has no formal title or position within the organizational structure to indicate what that is. When he complains that an upcoming merger makes him vulnerable because the new owners will not understand his role in the firm, the head of the firm replies, "Everyone knows how valuable you are, Michael. Everybody who needs to know. Anybody can go to court. That's not special. At what you do, you're great. You have a place. You made a niche for yourself" (Gilroy, 2007).

Michael Clayton fulfilled an illicit organizational role in his law firm. We define illicit roles as roles that specialize in activities forbidden by law, regulatory bodies, or professional societies, in the belief that doing so provides a competitive advantage. In this paper, we develop theory about the characteristics and importance of this type of role in organizations. We propose that the departure of illicit role occupants is particularly disruptive to the teams in which they operate. We argue that, in part, this is because there are few credible and capable replacements for occupants of illicit roles. Thus, efforts to replace illicit role occupants will slow a team's recovery in the wake of their departure. We further propose that because illicit role occupants require local experience to be effective, the performance disruptions associated with the departure of an illicit role occupant will be magnified as a function of his experience with his team. Ultimately, the characteristics of illicit roles mean that teams that include such roles have difficulty maintaining resilient performance when their occupants depart.

Using longitudinal data on National Hockey League (NHL) teams, we find that when the player who specializes in prohibited activity—the enforcer—is absent from his team due to injury, team performance suffers more than when occupants of certain formal roles are injured (team captains or center forwards). In addition, we find that a team's performance recovers more slowly from an enforcer's injury to the extent that the team tries to replace him with another player, and that the impact of an enforcer's exit on performance is magnified as a function of his experience with his team. We argue that the challenges associated with replacing illicit role occupants, and the importance of local experience to enacting such roles effectively, are more broadly characteristic of roles that operate outside of formal role structures. Our goal is to theorize about the nature and implications of illicit organizational roles specifically, as well as enrich our understanding of organizational roles that function outside official channels more generally.

ORGANIZATIONAL ROLES

The idea that individuals occupy roles in social life is one of the most compelling and pervasive in the social sciences. A cursory overview of 20th century social theory easily surfaces a dozen seminal scholars' efforts on the concept (Benne & Sheats, 1948; Goffman, 1959; Gouldner, 1957, 1958; Hughes, 1937; Katz & Kahn, 1978; Linton, 1936; Mead, 1934; Merton, 1957; Newcomb, 1950; Parsons & Shils, 1951; Strauss, 1956). Among the proliferation of theoretical perspectives and definitions of the role construct (Biddle, 1986; Stewart, Fulmer, & Barrick, 2005; Turner, 1975), some points of convergence are apparent (Bechky, 2006; Biddle, 1986; Callero, 1994), including a general consensus that a role is constituted by a set of behaviors (or expectations of behaviors) (Biddle, 1986: 70), consistently enacted by a specific individual or set of individuals (Katz & Kahn, 1978: 43), that arise and are negotiated within a given social context (Bechky, 2006; Bechky & Okhuysen, 2011; Handel, 1979).

Role theory distinguishes between roles that are part of formal organizational structures (Hughes, 1937; Linton, 1936; Mabry & Barnes, 1980), and those that operate outside official channels (Bales & Slater, 1955; Burke, 1968). Formal roles are intentionally established by a group or organization (Mabry & Barnes, 1980). They are "tangible" (Turner, 1975: 93), meaning that they codify individual responsibilities and are typically accompanied by legitimate authority and specific responsibilities, and overlap substantially with jobs (Ilgen & Hollenbeck, 1991) or positions (Linton, 1936; Parsons & Shils, 1951). Formalizing roles into official positions is a fundamental aspect of organizing (Fayol, 1949). Organizations typically arrange a set of formal roles into a role system (the set of roles in a social structure, see Rizzo, House, & Lirtzman, 1970: 155), which defines how formal role occupants should relate to each other and integrate their interdependent actions (Faraj & Xiao, 2006), and delineates channels through which to recruit and develop replacements (Mabry & Barnes, 1980).

Much empirical research on roles has focused on the benefits of formal role structures in supporting team processes and performance. For example, there is evidence that formal role structures help teams maintain high levels of performance when team membership is in flux (Valentine & Edmondson, 2015), in uncertain environments (Faraj & Xiao, 2006), or in temporary organizations (Bechky, 2006). Other work has explored how specific formal roles, such as leaders (DeRue et al., 2008; Klein et al., 2006), project managers (Huckman, Staats, & Upton, 2009), or production managers (Huckman et al., 2009), affect team performance. More generally, Humphrey and colleagues' (2009) work on "core roles" demonstrates that formal positions that are central to a team's work flow support team performance. Together, this work suggests that formal roles and role structures are key ways to support resilient performance in the face of adverse or unexpected events (Bigley & Roberts, 2001; Weick & Sutcliffe, 2007).

We know much less about roles that operate outside of formal organizational structures. Yet understanding these types of roles is important, because many aspects of organizational

life are not stipulated through formal structures or processes, but still critically inform organizational outcomes (Krackhardt & Porter, 1986; McEvily, Soda, & Tortoriello, 2014; Roethlisberger & Dickson, 1939/1964). Although Michael Clayton would have nominally held an official role within the firm, his primary role as a fixer could not be represented within the firm's formal role structure, because doing so would expose the firm to potential liabilities and undermine its legitimacy.

In this paper, we investigate a specific instantiation of an illicit organizational role, and examine the performance implications of this role within the teams where it is enacted. Consistent with the idea that roles are shared expectations of behavior within a social system (Linton, 1936; Parsons, 1951) and a negotiated consequence of social interaction (Mead, 1934; Strauss, 1978), we focus on studying roles within their immediate social context, because this is where their effects will be most apparent. For organizational roles this will be in the group or team in which the illicit role occupant works.

In the sections that follow, we first describe why organizations may include a role that specializes in illicit activity. We then argue that it is more difficult for a team to maintain resilient performance upon the departure of an illicit role occupant, compared to the departure of a formal role occupant (Hypothesis 1). We suggest that this is because illicit role occupants are particularly difficult to replace, and, consistent with this idea, replacing an illicit role occupant will slow the team's performance recovery after his departure (Hypothesis 2). Finally, we propose that one reason why illicit role occupants are difficult to replace is because they require experience in the local social context to be effective. Thus, we predict that experience within the team will magnify how disruptive his departure is (Hypothesis 3).

A Role Specializing in Illicit Activity

Organizations may have an individual specialize in illicit activity for several reasons.

Often, such individuals provide the firm with an unfair competitive advantage. In the auction industry, for example, individuals known as "ghost bidders" drive up prices by bidding surreptitiously against real potential buyers, increasing auction house profits (Steyn, 2012). Individuals also coordinate illicit payments to governments and agencies. For ten years, Sergio Cicero Zapata, an executive at Wal-Mart Mexico, called it "his job" to manage the individuals who bribed government officials on Wal-Mart's behalf. Having Zapata fulfill this role allowed the chain to quickly secure building permits and expand more quickly than their competitors (Barstow, 2012).

Second, illicit role occupants can help organizations solve problems that cannot be solved through official channels. For several years, it was the role of Patrick Wall, a Catholic priest, to smooth over parishioners' concerns after a local priest had been charged with sexual abuse or impropriety (National Public Radio, 2010). In Soviet Russia, factories often employed a "tolkach", a factory operative who "could find ways around the problem when supplies failed to arrive" (Brown, 2009: 581), typically through bypassing supply channels in forbidden ways.

Third, having select members specialize in illicit activities allows organizations to minimize the likelihood that they will be detected for engaging in them. Sergio Zapata occupied his illicit role at Wal-Mart Mexico for ten years without being detected. Designating certain individuals to specialize in illicit activities also provides organizations with easy scapegoats should those actions be revealed. The "central role" played by manager Mathew Martoma in the SAC capital insider trading scandal (U.S. District Court, 2014: 20) has thus far protected founder Steven Cohen from criminal prosecution (Viswanatha & Chung, 2016).

Why do we consider Sergio Zapata and Patrick Wall to have occupied illicit roles, as opposed to simply being individuals who engaged in illicit behavior? Aligned with our understanding of roles, we argue that an individual occupies an illicit role when there is consistency in their illicit behavior over time, and a shared expectation among others in the

local context that the individual will undertake these activities. For instance, former Enron CFO Andy Fastow was officially hired to raise capital for Enron using structured finance techniques (Markham, 2006). However, over the course of Enron's financial decline, he started to specialize in creating "structured finance transactions that made Enron look healthy when it was not," and even referred to this work as "my role" in the organization (Cohn, 2013). One can see the key elements of an illicit role in this example. Fastow engaged in a particular activity consistently over several years: manipulating Enron's accounting statements. Moreover, members of the senior team expected, and depended on, him to do so. These features of his professional responsibilities indicate that he was occupying an illicit role, and not simply engaging in illicit acts, as an individual, without the knowledge or expectations of others.

ILLICIT ROLES AND RESILIENT PERFORMANCE

For organizations to perform at consistently high levels, the work groups and teams within them need to be resilient in the face of surprises (Bechky & Okhuysen, 2011), crises (Gittell et al., 2006; Weick & Sutcliffe, 2007), volatile environments (Bigley & Roberts, 2001), and changing personnel (DeRue et al., 2008; Lewis et al., 2007; Summers, Humphrey, & Ferris, 2012). As Weick and Sutcliffe argue (2007: 71), resilient performance involves the ability to preserve functioning in the face of adverse events, as well as the ability to recover from them. Consistent with this understanding of resilient performance, we turn now to arguments about whether a team is robust to the immediate disruption caused when an illicit role occupant leaves his team (Hypothesis 1), and whether the team is able to recover quickly from it (Hypothesis 2).

Organizations use formal roles and role systems to build resilience to adverse events, such as the departure of team members (Bechky, 2006; Bigley & Roberts, 2001; Weick, 1993). The clear, public, and codified responsibilities of formal roles facilitate the

development and availability of qualified replacements when incumbents leave, and help to clarify expectations for newcomers, in turn making their actions more predictable to others (Goffman, 1961; Katz & Kahn, 1978). Roles and role systems thus support coordination as team members first work together (Bechky, 2006; Bechky & Okhuysen, 2011; Faraj & Xiao, 2006; Summers et al., 2012; Valentine & Edmondson, 2015), and adapt to changing membership (DeRue et al., 2008; Huckman et al., 2009; Summers et al., 2012). For example, a financial controller's responsibilities are very clear and largely consistent across organizations. Thus, when one controller departs, his or her replacement has a good idea of how to enact the role and manage their work relationships in the new context.

There are a couple of ways that formal role systems support resilient performance in the face of shifting team members. First, many role systems have built-in redundancies, so that more than one individual has the expertise relevant to occupy any given role. This ensures that a replacement is always available if necessary. In medical trauma teams, for example, the well-articulated roles of nurse, resident and attending surgeon allow qualified personnel to be treated interchangeably without substantial changes to team process and performance (Faraj & Xiao, 2006). Second, many teams cross-train their members to be competent in various roles, so that they can take on these responsibilities when faced with unexpected and disruptive events (Bechky & Okhuysen, 2011). Both of these strategies facilitate what Faraj and Xiao (2006) call "plug and play" teaming.

We suggest that, unlike formal roles, illicit roles have unique attributes that undermine, rather than support, resilient performance. First, the nature of the work required by illicit role occupants make it difficult to source qualified replacements. Illicit role occupants engage in risky work that exposes occupants and their organizations to liabilities and reputational costs. Research on other types of undesirable work, such as morally tainted "dirty work" (Hughes, 1962) suggests that many individuals may be less willing to take on

these types of tasks, even temporarily. Studies document that when there is dirty work to be done in teams, it is disproportionately assigned to the few individuals who are willing to do it. For example, few nurses are willing to perform "genetic terminations" (ending pregnancies with incurable genetic conditions) (Chiappetta-Swanson, 2005) and few health center workers are willing to take on violent psychiatric patients (Emerson & Pollner, 1976). When those who do perform such activities turn over, there are few eager replacements for them.

Second, even when there are individuals willing to step into an illicit role, the high-risk work they undertake means that any new recruit would need to be highly trusted by the team to enact the role effectively. There may be doubts about a newcomer's intentions, motives and competence (McEvily, Perrone, & Zaheer, 2003), and this lack of trust would increase monitoring of the new role occupant's activities (Langfred, 2004), undermine coordination (Okhuysen & Bechky, 2009), and detract from other team members' performance (Okhuysen, 2001). An internal replacement might be trusted, but since organizations cannot openly sanction illicit roles, they are unlikely to have engaged in cross-training efforts (Bechky & Okhuysen, 2011; Klein et al., 2006) to ensure that they could step into the role competently.

Third, knowledge about how to operate in an illicit role is difficult to transfer, which makes it harder for replacements to benefit from the experience of others (Edmondson et al., 2003). While it might appear that Sergio Zapata's role at Wal-Mart involved relatively generic corruption, in practice the specific knowledge and skills necessary to occupy his role were highly context-dependent. Since a firm cannot transparently budget for bribes, nor keep careful records of corrupt officials' preferences for how to make those payments, Zapata had to develop knowledge that would be impossible to acquire without in-role experience. Because this knowledge has to be undocumented, it leaves any replacement a bit bereft: How much should I offer? To whom? Through what intermediary, if any? What funds do I use for

these payments, and how do I account for them? A replacement for an illicit role occupant likely needs to learn the boundaries of acceptable action within the norms of a given team, requiring new occupants to learn the role on their own through trial and reflection (Edmondson, Bohmer, & Pisano, 2001).

Fourth, it may be unclear to a replacement how the activities associated with the illicit role should be integrated with the organization's legitimate work. Illicit role occupants may be kept separate from the organization's core work to protect other members from associated risks. At SAC Capital, for example, portfolio managers were organized in a "hub and spokes" structure to protect the core of the firm from liability when any isolated manager (a "spoke") was accused of insider trading (Keefe, 2014). This separation means that interaction between illicit role occupants and others in the organization is likely limited, which will further slow a replacement's understanding of how to coordinate their work with everyone else's.

Overall, these attributes of illicit roles (that they involve risky work that requires context-specific expertise) imply two things. First, these characteristics of illicit roles mean that replacing an illicit role occupant is likely more difficult than replacing occupants of formal roles. While replacing any team member is challenging, and a formal role occupant's replacement might not perform as well as the incumbent did (Lewis et al., 2007), formal role systems support resilient performance by building in redundancies in a way not possible for illicit role occupants. In contrast, when an illicit role occupant leaves a team, it will be less clear who (if anyone) will take on his or her responsibilities, and whether a replacement will be competent in the role.

Second, the work that illicit role occupants engage in is highly specialized, and tightly coupled to the context in which it is undertaken. Compared to an incoming illicit role occupant, incoming formal role occupants have a clearer understanding of what their work is and are more likely to have practiced those skills. In addition, other team members will more

easily trust a new formal role occupant and be able to integrate their efforts, allowing the team to continue its work with less disruption. Therefore, we suggest that, because credible and competent substitutes are typically more available for occupants of formal roles than for illicit ones, team performance will be less resilient upon the departure of an illicit role occupant compared to the departure of a formal role occupant. Specifically, we predict that the relative disruption a team faces upon losing a team member who fulfills an illicit role will be larger than the disruption faced upon losing occupants of formal roles.

Hypothesis 1. Team performance is more disrupted after the departure of an illicit role occupant than after the exit of a formal role occupant.

Illicit Roles and Recovering from Performance Setbacks

Resilience requires more than the ability to maintain performance in the face of adverse events. Recovery, the rate at which a team improves following a setback, is a key competency that allows teams to perform reliably over the long run (Kozlowski et al., 1999; Weick, 1993; Weick & Sutcliffe, 2007). The challenges associated with replacing an illicit role occupant may not only cause an initial disruption to performance after a departure, but may also make recovering from such departures particularly challenging.

Teams have a couple of options when adapting to a team member's departure. One strategy is to replace them, using either an existing member or someone new to the team. Whether this approach is effective will depend on the availability and competence of the replacement. Consistent with our arguments above, we maintain that efforts to replace an illicit role occupant will slow a team's performance recovery, in part because to enact an illicit role effectively requires experience within the local social context. This local experience is necessary for two reasons. First, it is difficult to develop the skills to enact an illicit role outside of the team where the role is enacted. Second, other team members need to trust illicit role occupants to be competent when carrying out illicit activities, and know how

to integrate their actions with him. We argue that these two challenges with sourcing credible and competent substitutes for a departing illicit role occupant mean that attempts to do so will slow a team's efforts to recover their former level of performance.

Another approach a team can use following a member's departure is to shift strategies, and recombine their efforts in a new way. Instead of inserting a replacement who likely has neither the skills nor the experience in the context to enact the role effectively, a team can adjust to a "new normal" without trying to replace the absent member. A recovery strategy that does not involve replacing the illicit role occupant is adaptive in that it updates team member roles (LePine, 2003), rather than being reliant on former structures, which may fail (Lewis et al., 2007).

Empirical research supports the claim that adapting to a new role configuration after a team member's departure may be more effective than trying to replace the role occupant who is absent from the team. In an experiment, De Rue and his colleagues studied the comparative effectiveness of three different strategies teams can use to manage the exit of a team member (DeRue et al., 2008). They found that the strategy that involved the most profound change to the team's role composition was the only one not followed by a drop in performance, because it required the team to engage in more adaptive behaviors. Other studies have also found that the extent to which teams adapt their role structure in the face of disruptive events is a key determinant of resilient performance (Hutchins, 1991; LePine, 2003). These results imply that managing without a replacement, rather than replacing the departed role occupant and relying on the previous role structure, may be the most effective way to recover from the exit of an illicit role occupant.

Hypothesis 2. Following the exit of an illicit role occupant, teams that replace the occupant will experience a slower performance recovery compared to teams that do not replace the occupant.

The Context-Dependence of Illicit Roles

Thus far, we have argued that team performance will be less resilient to the loss of an illicit role occupant, compared to occupants of roles that are part of the organization's formal role structure. We have suggested that finding suitable replacements for illicit role occupants is particularly challenging, in part because to fulfill an illicit role effectively requires experience in the local social context. We now explain in greater detail why this is so.

Experience in the local social context drives the effectiveness of illicit role occupants for two reasons. First, experience allows trust to develop among team members. Trust is critical for carrying out the risky work that illicit role occupants undertake. John Dean, a key operator in the Watergate scandal, provides an example of how illicit role occupants need to be trusted team members to be effective. Dean was Nixon's White House Counsel from 1970-1973, and his role as "linchpin" between the White House and the Committee to Re-Elect the President was possible because, in his words, "I was the only one with the knowledge and personal rapport to reconcile the pitched camps at the White House and the Re-Election Committee" (Dean, 1977: 125). Both groups trusted him to run the illicit communications between the President and the Re-Election committee, which was only possible because he was a longstanding team member. Second, experience in the local social context helps to clarify the appropriate boundaries surrounding illicit work. Though it may be very clear what an illicit role occupant is expected to do (such as bribe local officials), knowledge about *how* to undertake that work is unlikely to be documented or explicit (how much to offer, to whom, and how to account for it). One can only learn the appropriate ways to carry out the activity within the context where the role is enacted.

Paramedic teams offer an example of how local experience deepens the effectiveness of illicit role occupants. The official responsibility of a paramedic is to safely transport patients in emergency situations to physicians. They are prohibited from performing tasks

that require advanced medical training. In some cases, however, such as when patients "crash" and are close to death, certain paramedics undertake these prohibited medical procedures to save patients. These actions need to be managed illicitly, since there are serious consequences if they are officially detected. Only highly trusted paramedics with longstanding tenure in their teams take on this illicit role, not only because they are highly experienced professionals, but also because they are aware of exactly what they are able to get away with, how to do so within the local context, and are trusted by their team members to do so (Anteby, 2008). While the life-saving activities these paramedics perform may seem generic (i.e. performing a tracheotomy if a patient's breathing is obstructed), understanding when and whether to contravene one's permitted duties in this way requires highly context-dependent knowledge.

Many studies show that familiarity within a team typically improves team performance (Espinosa et al., 2007; Goodman & Leyden, 1991; Harrison et al., 2003; Huckman et al., 2009; Okhuysen, 2001; Reagans, Argote, & Brooks, 2005). Our arguments suggest a more nuanced relationship: experience within the team may be *more* important for illicit role occupants than for occupants of formal roles. Formal roles have the advantage of clear expectations that are known to occupants in advance. For example, Generally Accepted Accounting Principles support transferable role-based knowledge for accountants, and mitigates the need for context-dependent knowledge. Illicit roles lack codified knowledge that can be learned and transferred in this way. For illicit role occupants, experience in the social context where the role is enacted is required to accumulate the trust and specialized local knowledge necessary to carry out illicit activities in a credible and competent manner. Thus, we argue that an individual's experience within the team is particularly important for illicit roles occupants, and will drive the extent of the disruption teams face when they leave.

Hypothesis 3. The decline in team performance following the exit of an illicit role

occupant will depend on the occupant's experience with the team: the greater the illicit role occupant's experience with the team, the more disruptive their exit.

METHODS

Research Setting

We investigate our hypotheses in the context of professional National Hockey League (NHL) teams. Professional sports have long been used as an empirical context to extend knowledge about several organizationally relevant phenomena (Day, Gordon, & Fink, 2012), such as tacit knowledge (Berman, Down, & Hill, 2002), leadership succession (Grusky, 1963; Pfeffer & Davis-Blake, 1986), and core role holders (Humphrey et al., 2009). Professional hockey teams are a prototypical action team. Similar to medical teams (Huckman et al., 2009; Klein et al., 2006; Reagans et al., 2005) and emergency response crews (Bigley & Roberts, 2001), hockey teams carry out highly interdependent, time-constrained work that requires specialized collective skill (Sundstrom, de Meuse, & Futrell, 1990).

The Enforcer Role. We investigate the performance consequences of losing the team's enforcer, an illicit role in professional hockey. A typical NHL game involves physical contact, which can escalate into violence between members of opposing teams. Teams often include a member whose purpose is to fight opposing team players (Branch, 2011; Keneski, 2011), even though fighting is prohibited by Rule 46 of the game (National Hockey League, 2011). An enforcer spends little time on the ice and rarely scores goals (Keneski, 2011). However, they spend considerable time in the penalty box for fighting. Derek Boogaard, a long-time enforcer for the Minnesota Wild, scored only three goals during his career, but accrued 589 minutes in penalties, predominantly for fighting (Branch, 2011). Sports writers, coaches, and players commonly argue that enforcers contribute to team performance by maximizing the task contributions of their teammates, by representing a credible threat of retaliation, such that in their presence, players literally have more space to skate, pass and shoot without the fear of

physical harm (Bernstein, 2006).

The enforcer role is illicit for a number of reasons. Consistent with our definition of illicit roles, enforcers specialize in activity that contravenes rules or regulations in the belief that doing so supports organizational goals. There is no official position on a hockey team dedicated to intimidating opponents (enforcers also hold a formal role on the team) nor are enforcers identified on the team roster or in league statistics. While most NHL teams have at least one enforcer, there is some variation in the prevalence of the role. For instance, in recent years, the Detroit Red Wings have rarely had a dedicated enforcer in their line-up, while the Toronto Maple Leafs have often had multiple players hold the role (Cotsonika, 2013).

Some aspects of the enforcer role lead to reasonable questions as to whether it truly operates outside official channels or formal structures. Teams and fans generally know who the enforcers are; they are identified as such in the media and fan sites, and teams recruit players to fulfill this role (Olive, 2014). Many illicit roles outside of sports operate similarly: occupants are often well known in their industries, are recruited for their skills, and constitute an “open secret”. Even though others know that these individuals exist, and are deployed consciously with a clear view of what is required of them, their roles must remain informal because of the legal risks and legitimacy losses that would result if they were to become official. Like Michael Clayton in his law firm or Patrick Wall in the Catholic Church, the NHL could never create a formal role for enforcers because they specialize in activity it prohibits, and is under pressure to reduce further (Marchie & Cusimano, 2003).

Ultimately, this context provides a unique opportunity to move beyond previous empirical research on organizational roles. First, it is challenging to find a field setting where illicit role occupants can be identified accurately across a number of teams. Because the activities characteristic of the enforcer role are clear and easy to measure, we can accurately identify players who occupy it. Second, our empirical context allows us to isolate the effect of

individual role occupants on changes in team performance. Hockey players frequently become injured, and this unexpected exit allows us to estimate changes in team performance with empirical precision. Finally, unlike many field settings, where individual contributions and team outcomes can only be defined or measured ambiguously, professional sports offers clear performance outcomes and rigorously measured individual contributions to those outcomes (Day et al., 2012).

Data

Our sample consists of game, player and team level data from the 2005-2006 and 2006-2007 NHL seasons. We collected data from the NHL's official website (NHL.com) and supplemented these with injury data from the Canadian sports broadcaster TSN (The Sports Network; www.tsn.ca). We first collected all player injuries that occurred during both regular seasons. There were two criteria for including an injury. First, the player must have missed at least 1 full game due to his injury. Second, the injured player must have played in at least 2 of the 10 games leading up to his injury. Employing this cutoff ensures that the player was a relatively stable member of his team and that there were sufficient game-level observations preceding the injury to calculate a measure of the player's past performance. Applying these inclusion criteria yielded a final sample of 1,473 injury events.

We matched the final sample of injuries with game-level data preceding and following the injury event, making the unit of analysis the injury-game. More specifically, we matched each injury game with 1) the games that the player played in during the 7 games preceding the injury, and 2) two full games after the injury. This structure means that these data include two distinct periods: the up to 7 game pre-injury period, and a 2 game post-injury period that begins with the first full game missed due to injury, plus the following

game.[1] The length of the injury period was determined by a couple of factors. The 7 games preceding the injury captures approximately 2 to 3 weeks of team play, to estimate the team's performance trend when the injured player was in the line-up. The 2 game post-injury period was intended to capture the immediate consequences of the player's absence. To test Hypothesis 2, the post-injury period was extended to 6 games, to provide enough time following the enforcer's injury to observe a recovery in team performance. The average duration of a player's injury was 7.379 games (*SD* = 8.768). If the player returned in fewer than 2 games, the post-injury period was truncated to include only those games during which he was injured and unable to play.

Measures

Enforcers. We used two criteria to identify enforcers. First, using a website that tracks player fights in the NHL (hockeyfights.com), we compiled a list of players who had been in 10 or more fights during either the 05/06 or 06/07 seasons. Thirty players fit this description, corresponding to the top 7.6% of fighting players. Second, to verify that this group aligned with experts' understandings of who occupies these roles, we searched for these players' names in the Canadian Newsstand archives. Since the Canadian press covers the NHL comprehensively, using this database of nearly 300 Canadian newspapers increases the likelihood of identifying peripheral players, such as enforcers. Twenty-nine of the 30 had been labeled as an "enforcer" or "tough guy" in the database.[2] We matched these 29 players with our sample of player injuries, leaving us with a set of 39 enforcer injuries incurred by 20 unique players. The variable *enforcer* is an indicator variable coded as 1 if the player was identified as an enforcer, and 0 otherwise.

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[1]It is plausible that enforcers are more likely to fight (and get injured) in games where their teams are losing. A negative effect of enforcer injury on team performance could be attributed to this confound, rather than the loss of the role occupant. To address this concern, we count the first full game missed as the injury game. This way, if the player did get injured at some point during a losing game, this game would fall within the pre-injury period.

[2] To verify our classification system, we also correlated whether a player was labeled an enforcer (0/1) before or after the 05/06 and 06/07 seasons, with the player's maximum number of fights during either season (r = 0.612).

Team Performance. Our dependent variable is the number of points earned by a team in the focal game. There are three possible outcomes in a NHL game. Teams earn 2 points if they win, and no points if they lose. There are no tie games, but teams earn 1 point if the game is tied at the end of regulation time and the team subsequently loses in overtime. Team points are a more meaningful indicator of team performance (compared to a binary win/loss outcome) because they determine which teams participate in the playoffs that designate the league champion as well as the seeding of the teams in the playoffs.

Team Experience. We operationalized team experience using a count of the total games a player had played with his team, across all seasons, leading up to his injury. This measure is consistent with our conceptualization of team experience because it captures the time that an occupant has accrued within his team and correspondingly measures how much experience the team has had with that player. On average, injured enforcers had played 108.2 games with their team (roughly 1.3 seasons), though this value ranged from 9 to 417 games.

Replacement. We used the Gini coefficient to measure the extent to which penalties were concentrated in other team members following an enforcer's injury. Commonly used to measure income or wealth inequality (Atkinson, 1970), the Gini coefficient has also been used to measure disparity in various contexts, such as the degree that editing is concentrated among Wikipedia contributors (Kittur & Kraut, 2008). We used the extent to which teams concentrate their penalties in fewer players after an enforcer's injury (have a Gini closer to 1) as a proxy for whether an enforcer was replaced. We calculated a team's Gini coefficient for every game of the season using team penalty minutes. We did not limit this calculation to fighting penalties because of the low incidence of fighting on a game-by-game basis. Penalties are incurred for all activities that are officially forbidden, and the correlation between a player's fighting penalties and his overall penalty minutes is 0.579.

Control Variables. We also calculated a number of time-varying controls. *Team past*

performance is a rolling average of the team's earned points over the season, to date. *Opponent past performance* is a rolling average of the opposing team's earned points to date. We control for this since the likelihood that a team will win a game depends, in part, on the strength of the opposing team. *Team penalties* are the total number of penalty minutes incurred by a team in a game. Having a dedicated enforcer may reflect the overall level of aggressive play on a team, and controlling for team penalties rules out the alternate explanation that changes in performance stem not from the role of the enforcer, but from generally aggressive play. The dummy variable *home team* is 1 if the team played in their home arena, and 0 if they played in the opposing team's arena. Two additional time-invariant measures controlled for trends in the injured player's performance. *Player past performance* is the average number of individual points (goals plus assists) earned by a player in the seven games preceding the injury. *Player time-on-ice* is the average number of minutes the injured player played in the seven games before his injury. Time-on-ice better captures the value of defensive players who may score few goals and assists during the season but are nonetheless important contributors to team performance.

Empirical Strategy

We used ordinary least squares (OLS) regression to estimate changes in team performance resulting from a role occupant's injury (Hypothesis 1). Because the timing of injuries is unexpected and independent of other predictors of team performance, comparing team performance when a player is an active member of the team, to a period when that player is injured, isolates the effect of an individual role occupant on performance from other unobserved, potentially confounding factors. Other work has used a similar approach to estimate the effect of star coauthors (Azoulay, Zivin, & Wang, 2010) and helpful colleagues (Oettl, 2012) on research productivity. We then estimate the team's rate of performance recovery following the injury, contingent on the extent to which an enforcer is replaced

(Hypothesis 2), and the degree to which the change in performance depends on the enforcer's experience in his team (Hypothesis 3).

To estimate the change in team performance due to a role occupant's injury, we created a dummy variable *injury* that switches from 0 to 1 in the first full game the player missed due to injury. To estimate the effect of an enforcer's injury on team performance, the variable *enforcer* is interacted with *injury*. Relatedly, to estimate a team's rate of performance recovery following an injury, we created a variable *post-injury* that is coded 0 for the games preceding and including the injury, and counts the number of games that have elapsed since the injury game. *Post-injury* is interacted with *enforcer* to estimate a team's rate of recovery following an enforcer's injury. Time invariant control variables (*player past performance* and *player time-on-ice*) were directly estimated in the presence of the injury fixed effect by interacting each with the time-varying *injury* variable.

We used an injury fixed effect to partial out the unobserved time-invariant attributes of the injured player and his team. None of the injured players in our sample changed teams leading up to his injury (i.e., an injured player and his team are perfectly collinear). Thus, the injury fixed effect means that our analyses hold the team constant and estimate changes in performance *within* a team over time, as opposed to estimating differences in performance *between* teams. We also used an opponent fixed effect to partial out the time-invariant attributes of the opposing team.[3] Before creating interaction terms, we grand mean centered continuous variables (Aiken & West, 1991).

We took a number of steps to address the sources of non-independence in these data. First, the inclusion of the injury fixed effect accounts for non-independence among game-level observations that are nested within injuries, because the parameters are estimated from

[3] We do not include a dyad fixed effect to control for the unique interaction between team pairs. If we did, we would only be able to identify injuries that occur within series of games between two of the same teams during the injury period. Only 15.41% of the games in our sample are against 'repeat' opponents (opponents that a team has already played in the injury interval) and including a dyad fixed effect would result in the loss of information from most the majority of our observations.

within-group variance. Second, to address concerns relating to any remaining within-group correlation, such as serially correlated game observations, all models report robust standard errors (Wooldridge, 2000). Third, some players are injured more than once in the season, meaning that the residuals for injuries that concern the same player are correlated. Unless reported otherwise, robust standard errors are clustered at the player to correct for the non-independence between some injury observations.

Results

Tables 1 and 2 contain descriptive statistics and correlations for the study variables.

--- INSERT TABLES 1 AND 2 ABOUT HERE ---

Table 3 reports the results of seven regression models to test Hypothesis 1, which predicts that after an enforcer's exit, the disruption to team performance will be greater than that observed after the exit of formal role occupants. Model 1 regresses team performance on the control variables and the player injury variable. The injury of any player was associated with a (statistically non-significant) drop in the team's average performance over the following two games.[4] Like many action teams, hockey teams are built to be resilient to changes in composition. That team performance is robust to player injuries, on average, reflects that teams are designed to sustain such shocks to their composition by including at least one replacement for every formal position on the roster. In Model 2, we interacted injury with the player performance and player time-on-ice variables. In the presence of the injury fixed effect, these variables proxy recent trends in player performance. Player performance has a negative and significant effect on team performance after that player's injury, indicating that the exit of high scoring players detrimentally affects team performance.

[4] One might also compare average team points during the period leading up to an enforcer's injury (the pre-injury period) to the period when an enforcer was injured and unable to play (the post-injury period). A t-test indicated that, on average, teams earned more points when an enforcer was in the line-up (M = 1.101, SD = 0.056) compared to when he was injured (M = 1.000, SD = 0.118), though this difference was not significant, $t(332) = 0.790$, $p = 0.430$. However, this test compares changes in average performance *between* teams with and without an enforcer, not the changes in *within* team performance as a function of an enforcer's injury.

Model 3 includes an injury x enforcer interaction term that estimates the effect of an enforcer's injury on his team's performance, relative to all other injured players. The results provide initial support for Hypothesis 1. Teams experienced a larger drop in performance following the injury of an enforcer, relative to all other injured players, and this difference is significant ($p = 0.046$). Compared to the team's pre-injury performance, the injury of an enforcer resulted in an 11.3% reduction in team performance relative to the injury of any other player.

An alternate explanation for the finding that an enforcer's injury disrupts team performance is that it is not driven by the role occupant, but rather by changes in the level of violent activity upon his departure. Teams may have fewer fights when their enforcers are injured, thus a change in team performance may be attributed to a decline in fights rather than the exit of the enforcer. To investigate this alternate explanation, we looked at the average number of team fights per game before ($M = 0.537$) and after ($M = 0.363$) an enforcer's injury. While there is a decrease in fighting when enforcers are injured, and this difference is marginally significant ($p = 0.089$), directly controlling for changes in team fights before and after an injury (Model 4) did not change the relationship between an enforcer's injury and team performance.

A comprehensive test of Hypothesis 1 requires comparing the performance implications of an enforcer's injury to the loss of other formal role occupants. We chose three formal roles – captains, centers and goalies – as points of comparison. We chose these roles for two reasons. First, these roles represent both social and task-based formal roles (Bales & Slater, 1955; Burke, 1971), and second, they are the only roles in hockey teams for which there is one occupant on the ice at a time, making them appropriate comparisons to enforcers, who also participate in team play as the single representative of their role. The team's captain is the most prominent social role, and the formal NHL role closest to a traditional "leader".

Captains are well-respected players responsible for motivating the team, representing team concerns to management and league referees, and performing ceremonial functions (Ungar, 2012). Centers and goalies are both formal team positions, consistent with the understanding of a formal role as an organizational position or function (Linton, 1936; Parsons & Shils, 1951). Both centers and goalies would be considered "core roles" in hockey (Humphrey et al., 2009), as they are central to the workflow of the team.

Models 5 to 7 estimate the effect of an enforcer's injury on team performance compared to each of these formal roles. We coded an additional interaction term, injury x other roles, to identify players who do not occupy a role of interest, which allowed us to directly compare the impact of these distinct roles to each other. In Model 5, for instance, the injury x enforcer interaction term represents the effect of an enforcer's injury on performance compared to captains (and not compared to all other players). Results indicate that an enforcer's exit is 11.2% more disruptive to team performance than the injury of a captain (Model 5, $p = 0.087$), and 12.9% more disruptive than a center (Model 6, $p = 0.028$). As indicated in Model 7, however, we observe no significant difference between the performance disruptions caused by an enforcer compared to a goalie. We consider these mixed findings in more detail in the Discussion.

--- INSERT TABLE 3 ABOUT HERE ---

Table 4 reports the results of three regression models to test Hypothesis 2, that a team's performance recovery after an enforcer's injury will be slowed to the extent the team tries to replace him upon his exit. Model 1 estimates the effect of the control, injury, post-injury and enforcer variables on performance, as well as the replacement variable. Model 2 includes the two-way interaction terms necessary to test the three-way interaction between post-injury, replacement and enforcer. Model 3 includes the post-injury x replacement x enforcer interaction term that tests Hypothesis 2. Results from Model 3 indicate that a team's

performance recovered more slowly when a team attempted to replace the enforcer and this difference was significant. We probe the nature of the interaction further in Figure 1, which plots performance trajectories for teams with injured enforcers and non-enforcers at both low (25th percentile) and high (75th percentile) levels of penalty concentration post-injury. The figure shows the drop in performance teams face immediately following an enforcer's injury. In terms of performance recovery, holding constant the overall number of penalties incurred by a team, teams that attempted to replace the enforcer recovered more slowly than teams that dispersed their penalties across a number of players.

We conducted simple slopes tests (Aiken & West, 1991) that indicated that a team's rate of recovery is positive and significant ($b = 0.163$, $SE = 0.043$, $p < 0.001$) when an enforcer is injured and the team has low penalty concentration. We then compared this rate of recovery to teams that have a high penalty concentration after an enforcer's injury, and found that the low concentration teams recovered more quickly ($b = 0.157$, $SE = 0.051$, $p = 0.002$), and they also recovered more quickly than teams that had a low penalty concentration after the injury of a non-enforcer ($b = 0.152$, $SE = 0.044$, $p = 0.001$). Overall, these results provide evidence that substituting a new player into the gap left by an injured enforcer will slow the team's recovery following their exit.

--- INSERT TABLE 4 AND FIGURE 1 ABOUT HERE ---

Table 5 reports the results of five regression models we use to test Hypothesis 3, which predicted that the negative effect of an enforcer's injury on performance would be amplified by that player's experience with his team. All models include the control variables from Tables 3 and 4. To test Hypothesis 3, we first restricted our sample to only include injuries to enforcers. We then included an injury x team experience interaction term that estimates the extent to which the effect of an enforcer's injury on performance depends on his experience with his team. We did not have sufficient degrees of freedom to cluster the

standard errors by player in these models, unlike in Tables 3 and 4. As in previous models, robust standard errors are reported. The results indicate that the negative effect of an enforcer's injury on team performance increases with his tenure on the team. Consistent with Hypothesis 3, these results suggest that the longer enforcers have occupied their roles in a given team, the more disruptive their departures.

--- INSERT TABLE 5 ABOUT HERE ---

There are two potential alternate explanations for the effect of an enforcer's team experience on changes in performance following their injury. First, as better players plausibly have longer careers, team experience could be a proxy for his experience in the profession. Second, players with longer careers likely have stronger reputations, and this reputation may negatively affect the opposing team's performance. If either alternate explanation were true, the performance disruptions due to an enforcer's injury would also vary as a function of his experience in the NHL. Thus, we created a measure of the player's league experience, defined as the number of games played in the NHL on any team, at the time of his injury. Model 2 replicates Model 1, interacting injury with league experience rather than team experience. We observed no evidence that the effect of an enforcer's injury on team performance depends on a player's league experience, which helps to rule out individual skill or reputation as alternative explanations for the effect of team experience on performance.

We also conducted further analyses that replicated Model 1, but instead of testing the interaction between enforcer and team experience, we tested whether team experience also moderated the performance disruptions experienced when captains (Model 3), centers (Model 4) and goalies (Model 5) were injured. In none of these models do we observe a significant interaction between the formal role and team experience. These findings suggest that a key difference between illicit and formal roles is the extent to which in-role effectiveness is tied to one's personal experience within the team. Relatedly, while our earlier results suggest that

the loss of goalies and enforcers are equally disruptive to team performance, it appears that local experience is a mechanism underlying this effect for enforcers, but not goalies.

Robustness Checks. We conducted additional analyses to test the robustness of our primary findings. First, we experimented with the length of the pre-injury and post-injury periods. Results were similar in direction and magnitude when the pre-injury period was lengthened to 8 games and shortened to 5. We also replicated the primary findings while varying the length of the post-injury period. For Hypotheses 1 and 3, results are consistent with those reported here when we shorten this period to just the first game missed following the injury. For Hypothesis 2, the coefficient for the post-injury x concentration x enforcer interaction term is consistent in direction and magnitude beginning in game 5 and continuing through game 9 ($p < 0.10$). Second, we wanted to ensure that our results were not explained by the formal roles that enforcers held. Our results were consistent when controlling for the injured player's (enforcers and captains) formal position. Finally, these findings were also consistent ($p < 0.10$) using bootstrapped standard errors, a nonparametric approach that does not rely on the assumption that error terms are independently distributed (Guan, 2003).

DISCUSSION

In this paper we theorize about the nature of illicit roles in teams. We define illicit roles as those that specialize in activity forbidden by the law, regulatory bodies, or professional societies, and as a result, cannot become part of formal organizational role structures. We explored one instantiation of this role in professional hockey, a setting that includes a role for players who specialize in the prohibited activity of fighting: the enforcer. We hypothesized that team performance is less robust to the exit of illicit role occupants compared to formal role occupants, because replacing such occupants is challenging and experience in the team is required to enact such roles effectively. We found that the exit of an enforcer disrupts team performance more than the exit of some, but not all, formal role occupants. We also found that

efforts to replace an enforcer slows the team's rate of recovery after his departure. Finally, an enforcer's experience with his team magnifies how disruptive his departure is, consistent with the idea that experience within a particular social context is required for an illicit role occupant to be effective.

We did not find unadulterated support for our primary hypothesis. Though the exit of an enforcer was more disruptive to team performance than the exit of either captains or center forwards, the injuries of enforcers and goalies were equally disruptive. One of our central arguments about why it is difficult to be resilient in the face of losing illicit role occupants involves the challenge in developing credible and competent replacements for incumbents. Interestingly, one of the commonalities between enforcers and goaltenders is a dearth of replacements. Other formal roles in hockey, such as centers, have upwards of three other players on the team who can substitute into the their position at any time. On the other hand, the NHL limits the number of goaltenders on any team's roster to two (National Hockey League 2011). This lack of available substitutes likely plays a part in explaining why we observe no differences in performance disruptions upon the injury of goaltenders and enforcers.

This mixed support for Hypothesis 1 may point to other attributes of roles that affect resilient performance. Humphrey and colleagues (2009) define roles that have substantial exposure to a team's tasks and/or workflow as "core roles" and suggest that coordination in teams is disrupted when these occupants leave their teams. Goalies occupy one of these "core" positions; enforcers clearly do not. This could be why we observed the exit of enforcers and goalies to be similarly disruptive to team performance, albeit for different reasons, as enforcers are not core roles, and the disruption their exit causes is amplified by experience in their teams, where the same is not true for goalies.

Theoretical Contributions

We see our results as contributing to theory about roles, teams, and misconduct.

Role theory. To our knowledge, our paper is the first to theorize about an organizational role that specializes in an illicit activity. While formal roles and role structures are commonly understood as a source of reliable performance in teams (Bechky, 2006; Faraj & Xiao, 2006; Valentine & Edmondson, 2015), our findings suggest that these attributes do not extend to their illicit counterparts. In fact, illicit roles may be a source of vulnerability in teams: when occupants of these roles leave, team performance is more destabilized than when the occupants of several formal roles leave.

These findings also help extend our understanding of roles more generally. Most theory on organizational roles has focused on those that are formalized, and references to informal roles have been sporadic. While we acknowledge that our context only allows us to test our hypotheses on a single unofficial role that specializes in illicit activity, we can speculate about additional types of roles that exist outside formal structures and may function in a similar way.

Roles characterized by activities that cannot be explicitly articulated. Some roles exist outside of formal role structures because to formally acknowledge the role would undermine its effectiveness. Groups often have covert needs that can only be met if they are not openly or consciously recognized by their members (Gemmill & Kraus, 1988). For example, a scapegoat's value lies in being the "fall guy" for performance failures (Boeker, 1992; Gamson & Scotch, 1964), and are most effective when the group is unaware that they have even created such a role (Gemmill, 1989). In a similar vein, deviants build internal cohesion and define group boundaries (Becker, 1963; Coser, 1962; Dentler & Erikson, 1959), but would not be able to serve this purpose if the group acknowledged that its internal cohesion stemmed from collectively tolerating the deviant.

Roles characterized by activities that are ambiguous. Other roles cannot become part of official role structures because the functions they fulfill are too context-specific and amorphous to codify. For example, Bolinger and colleagues (2009) identified the "glue" role as one that

attends to gaps in group process and engages in behavior that may not be overtly recognized, but that directly facilitates a group's creative process. It would be challenging to create a formal "glue" role in a group, since it requires observing in-the-moment, group-specific activity and stepping in to ensure that a neglected activity is undertaken.

Like illicit roles, these roles cannot be formalized, either because it is impossible to officially acknowledge them, and/or because the activities that characterize them are too context-specific or amorphous to codify. Given these shared features, it is worth thinking about how these other types of roles that also function outside official structures may operate like illicit roles. For example, experience within a team may drive effectiveness for occupants of any informal role. Replacing any informal role occupant may likewise be challenging. One cannot recruit a scapegoat; rather, time allows one to emerge (Gemmill, 1989; Gemmill & Kraus, 1988). Of course, these are conjectures, based on how we might extrapolate new theory from our empirical results about a single illicit role. Future work needs to assess the validity of our intuitions.

Theory about teams. Our findings are particularly relevant to literature on role composition in teams (Humphrey et al., 2009; Kozlowski et al., 1999; Summers et al., 2012), and point to the robustness of a formal role structure in enhancing stability. Teams appear to adapt well to the departure of formal role occupants, possibly because formal role structures facilitate available replacements. The literature has been much more silent about roles that operate outside official channels (Bales & Slater, 1955; Burke, 1968), but our findings suggest that team resilience is adversely affected when occupants of these types of roles depart.

Our findings also speak to the literature on core roles in teams. Humphrey and colleagues' work on core roles shows that roles that are more central to a team's work flow, or have a greater exposure to team tasks, are more valuable to team performance (2009). Indeed, one reason why a goalie's injury is as disruptive as an enforcer's may be because a goalie

occupies a core role. Yet our findings also suggest that certain roles that are peripheral to a team's work flow, such as enforcers, can still substantially affect a team's ability to perform reliably. Enforcers do not occupy a core role: they spend very little time on the ice, and rarely assist in scoring goals or score themselves. Further elaborations of core role theory need to take into account that certain non-core roles, such as illicit roles, may be marginalized from a team's work flow and yet still substantially affect the a team's ability to demonstrate resilient performance.

Our findings also extend the literature on team familiarity. Most work on familiarity explores experience working together as a team-level phenomenon, either aggregating shared experiences across individuals within the team (Berman et al., 2002; Espinosa et al., 2007; Goodman & Leyden, 1991; Reagans et al., 2005) or differentiating teams in terms of whether or not members have pre-existing relationships (Balkundi & Harrison, 2006; Okhuysen, 2001). Our finding that team experience is particularly important for illicit role occupants adds nuance to this literature by demonstrating that the implications of team experience for performance may differ across members.

Theory about organizational misconduct. Our focus on illicit roles provides some preliminary insight on how teams may organize to carry out activities that are officially prohibited but are perceived to be valuable to organizational ends. We know very little about how legitimate organizations organize activities that help attain performance objectives but are nevertheless illegal or illicit (Brief, Buttram, & Dukerich, 2001). While there are other possible ways of distributing illicit activity, our study suggests that teams may engage in a role-based allocation of labor, such that it will be disproportionately undertaken by specific individuals. This idea is consistent with Moore and colleagues' conjecture that some individuals may be predisposed to "do disproportionate shares of ethically compromising corporate work" (Moore et al., 2006: 23).

Practical Contributions

To be clear, while we show that the departure of illicit role occupants disrupts team performance, we are certainly not suggesting that teams should create and fill roles for individuals who specialize in illicit activity. Indeed, our findings suggest that including such a role on a team creates a source of vulnerability for resilient team performance. Given that a central focus of the strategic management literature is to understand the conditions under which firms can develop a sustainable competitive advantage, our results suggest that including such a role in one's organization is a potentially risky strategy to pursue. Indeed, a conclusion of these findings is that the best strategy for a team with an illicit role is to avoid filling it when the occupant departs. An analogy to help illustrate the relationship of an enforcer with his NHL team is to think of them as safety blankets: it may be initally painful when they go away, but they might not have been needed in the first place.

It is also interesting to note that the performance disruptions due to an enforcer's injury were short-lived. This fast recovery partly reflects how common injuries are in hockey, and the ability of teams to bounce back from these types of events. It also begs the question as to whether teams are better off without these roles in the first place. Team members who perform legitimate activities well are likely more valuable, in the long run, than a lone member whose major contribution to the team is to engage in illicit activity.

It remains worryingly commonplace for organizations to attempt to gain an unfair advantage through the use of illicit roles. Fortunately, these results help us better understand how to regulate and discourage misconduct in organizations. Being aware that individuals specialize in illicit activity may make it easier for managers to identify and root out such individuals, and may allow regulators and prosecutors to detect misconduct within organizations more efficiently. These findings also suggest the importance of rotating personnel in areas that commonly include ethical risks. If individuals need time in a particular

context to become competent in these roles, keeping intra-organizational relationships fresh may hinder illicit activity.

Limitations, Boundary Conditions, and Future Research

It is important to consider our findings in light of potential limitations and boundary conditions, many of which point to avenues for future research.

Generalizability to other organizational and team contexts. It is important to note that our analytic strategy requires two important caveats. First, by estimating the effect of an illicit role on changes in team performance using injuries, we can only speak to the impact of an enforcer's loss for teams *that have an occupant in this role already*. We are not suggesting that having an enforcer—or that increased violence in hockey—is a performance *enhancing* strategy, only that if a team has an enforcer, losing him is disruptive. In fact, our results support the conclusion that employing an enforcer is a risky organizational strategy that undermines resilient performance. Second, we find that teams are able to recover more quickly when they do not replace the enforcer. We, however, only observe performance immediately following the player's exit, and can only speak to the implications of these exits over short periods of time. Future research could explore whether, and under what conditions, teams and organizations are able to not replace illicit role occupants while maintaining high levels of performance.

Second, we only examined the effect of one illicit role, the enforcer, on the performance of hockey teams. While this approach has many advantages – the role is common within hockey teams, and the empirical setting allows us to isolate the effect of the role from many confounding factors – our context raises reasonable concerns about generalizability. For instance, we cannot be sure that all illicit roles undermine resilient performance in a similar way, and welcome future research that attempts to replicate these results across other illicit roles and organizational contexts. For example, "rogue traders" - individuals who regularly exceed allowable limits on their daily trades - specialize in breaking rules and are often known

within their organizations. Accessing the "internal risk incident" logs at financial institutions could provide a route to identifying these individuals. Given the number of recent insider trading indictments (Farrell, 2014), one might also use archival court data to explore the roles that convicted insider traders occupied in their respective organizations, such as the one Mathew Martoma played at SAC Capital.

Our conclusions may also be constrained by the type of team in which this role emerges. It is possible that roles have the greatest impact on performance in highly interdependent teams, and where the overlap in role-related task responsibilities is limited. In our research setting, role occupants develop specialized skills. This specialization is particularly important among enforcers, and may lead to specific competitive advantages for hockey teams that may not fully translate to other unofficial roles. In addition to their degree of specialization, another attribute of the enforcer role is that there is a high degree of consensus within (and outside) the team about who the role occupant is, and what the responsibilities of the role are. It is less clear how our findings may translate to settings where informal role requirements are more ambiguous.

The emergence of illicit roles. Our setting involved an illicit role that was normative in an industry, which meant that we were unable to address questions about how and why illicit roles emerge in teams and organizations. If, as some theory proposes (Stewart et al., 2005), roles emerge as a function of the predispositions of the individual and the functional needs of a team, one might predict that an illicit role emerges when a) a team identifies an illicit function that could benefit performance, and b) a team member with the appropriate skill set and/or proclivities to carry out this function is present. A related question is under what conditions do organizations resist adopting such roles? While most of the hockey teams in these data employed an enforcer, interestingly, a few teams did not. It could be useful to understand the factors that lead some organizations to resist industry pressure to adopt an

illicit role, as they point to interventions that could be employed to contain the spread of unethical practices within an industry.

The broader question of why an illicit role may spread across an industry is also interesting. One could imagine that the prevalence of such roles would increase with shifts in the competitive landscape. When firms enter new markets, such as in the case of Wal-Mart Mexico, they may employ illicit roles to gain a first mover advantage. Similarly, when profit margins shrink due to new competitive pressures, firms may turn to illict roles to maintain profitablility. That is, changes in competitive pressures within an industry (Staw & Szwajkowski, 1975) may drive the emergence of these roles as organizational actors strive to capitalize on growth or maintain the status quo.

The persistence of illicit roles. Our findings also raise interesting temporal questions about the persistence of illicit roles that these data were not able to address. We know little about why these roles persist in some contexts and not others. Enforcers have been a fixture in hockey for decades, only recently waning in popularity. Litigation against the NHL by former players suffering from the long-term implications of violent play has encouraged more stringent enforcement of league regulations, leading to the lowest levels of fighting in the league since the early 1970s, and a declaration by Canada's national newspaper that "the era of the goon is over" (*Globe and Mail*, 2015). This suggests that industry-wide pressure may be one route toward eliminating illicit roles. In general, better understanding the incentives across contexts that condone and reward these roles may help us better identify ways to encourage their obsolescence.

Mechanisms underlying the relationship between illicit roles and resilient performance. Our empirical setting also constrained our ability to test our theorized mechanisms.While we find evidence that illicit role occupants are difficult to replace, and that their exit is more disruptive to the extent that the occupant has local experience within his team, we cannot test

many of the micro mechanisms that we theorize. For instance, future research could directly investigate how coordination is influenced by the exit of an illicit role occupant, and whether coordination is impeded by the team's lack of trust in the replacement.

Conclusion

Though roles are fundamental to our understanding of how interdependent activity is accomplished within organizations (Bechky, 2006; Katz & Kahn, 1978; Levine & Moreland, 1990; Stewart et al., 2005), explicit investigations about how roles contribute to group-level outcomes are rare (Levine & Moreland, 1990: 603). While we are not the first to suggest that roles that operate outside official channels are important, to our knowledge we are the first to explore illicit roles in organizations, and the first to document how, for some teams, their sustained performance may depend on illicit roles more than we would like to admit. As such, our work re-engages the conversation about the importance of informal processes for group outcomes (McEvily et al., 2014; Roethlisberger & Dickson, 1939/1964), and adds a missing richness to seminal discussions about the importance of roles in teams and organizations.

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Table 1.
Summary Statistics

Variable	*N*	Mean	Std. Dev.	Min	Max
Team points	12493	1.093	0.936	0	2
Team past performance	12493	1.120	0.254	0	2
Opponent past performance	12493	1.105	0.245	0	2
Team penalties (minutes, per game)	12493	14.928	8.714	2	97
Home team	12493	0.495	0.500	0	1
Injury	12493	0.202	0.401	0	1
Player performance (goals and assists, pre-injury average)	12493	0.365	0.350	0	2
Player time-on-ice (minutes, pre-injury average)	12493	16.282	8.331	0	61.288
Enforcer	12493	0.027	0.161	0	1
Captain	12493	0.056	0.231	0	1
Center	12493	0.254	0.435	0	1
Goalie	12493	0.071	0.257	0	1
Team experience (00s games)	12493	1.596	1.747	0.020	14.740
League experience (00s games)	12493	4.293	3.225	0.020	15.470
Post-injury games	15067	0.627	1.306	0	5
Concentration	15067	0.149	0.126	0	0.608

Notes. Descriptive statistics are reported for uncentered variables.

Table 2.
Correlations for Study Variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Team points	-														
2	Team past performance	0.260	-													
3	Opponent past performance	-0.025	-0.178	-												
4	Team penalties	-0.073	-0.053	-0.001	-											
5	Home team	0.129	0.017	-0.016	-0.019	-										
6	Injury	-0.005	-0.008	0.017	0.007	0.007	-									
7	Player performance	0.033	0.081	-0.019	-0.002	-0.003	-0.016	-								
8	Player time-on-ice	-0.004	-0.030	0.003	-0.008	0.004	-0.013	0.120	-							
9	Enforcer	-0.002	-0.019	-0.003	-0.013	-0.000	-0.002	-0.118	-0.192	-						
10	Captain	-0.026	-0.047	-0.004	0.026	0.001	-0.000	0.075	-0.009	-0.041	-					
11	Center	0.014	0.059	-0.009	-0.000	-0.007	-0.000	0.208	-0.159	-0.088	0.099	-				
12	Goalie	-0.008	-0.051	0.013	-0.020	-0.006	0.005	-0.277	0.575	-0.046	-0.068	-0.162	-			
13	Team experience	0.033	0.153	-0.006	-0.032	0.002	-0.012	0.166	0.153	-0.050	0.286	0.026	-0.059	-		
14	League experience	0.012	0.082	-0.018	-0.019	0.005	-0.007	0.181	0.021	-0.069	0.238	0.062	-0.177	0.250	-	
15	Post-injury games	-0.009	-0.006	0.010	0.015	-0.004	0.603	-0.019	-0.012	-0.000	0.001	-0.000	0.009	-0.017	-0.008	-
16	Concentration	-0.061	-0.047	-0.024	0.730	0.008	0.005	-0.012	-0.009	0.006	0.021	0.006	-0.005	-0.026	-0.031	0.006

Notes. Injury-game level observations: N = 12493. Correlations greater than 0.017 and less than -0.017 are significant at $p < 0.05$.

Table 3.
OLS Regression Results of Team Performance on Enforcer Injury

Dependent Variable: *Team points per game*	(1)	(2)	(3)	(4)	(5) Enforcers vs. Captains	(6) Enforcers vs. Centers	(7) Enforcers vs. Goalies
Team past performance	2.498**	2.501**	2.502**	2.504**	2.502**	2.502**	2.504**
	(0.171)	(0.171)	(0.171)	(0.171)	(0.171)	(0.171)	(0.171)
Opponent past performance	-0.772**	-0.769**	-0.770**	-0.765**	-0.770**	-0.769**	-0.769**
	(0.059)	(0.060)	(0.060)	(0.060)	(0.060)	(0.060)	(0.060)
Team penalties	-0.006**	-0.006**	-0.006**	-0.008**	-0.006**	-0.006**	-0.006**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Home team	0.232**	0.230**	0.230**	0.228**	0.230**	0.230**	0.230**
	(0.018)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Injury	-0.002	-0.004	0.002	-0.001	0.001	0.035	-0.128
	(0.020)	(0.020)	(0.020)	(0.023)	(0.069)	(0.037)	(0.097)
Injury x Player performance		-0.221**	-0.231**	-0.230**	-0.231**	-0.243**	-0.267**
		(0.062)	(0.062)	(0.062)	(0.062)	(0.063)	(0.070)
Injury x Player TOI		0.001	0.000	0.000	0.000	0.001	0.003
		(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
Injury x Enforcer			-0.226*	-0.222*	-0.224^{+}	-0.258*	-0.079
			(0.113)	(0.113)	(0.131)	(0.117)	(0.156)
Team fights				0.032			
				(0.019)			
Injury x Team fights				0.008			
				(0.026)			
Injury x Other roles					0.002	-0.045	0.140
					(0.073)	(0.045)	(0.104)
Constant	-1.004**	-1.010**	-1.010**	-1.010**	-1.010**	-1.012**	-1.013**
	(0.223)	(0.223)	(0.224)	(0.224)	(0.224)	(0.224)	(0.224)
Injury FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Opponent FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Game Observations	12,493	12,493	12,493	12,493	12,493	12,493	12,493
Injury Observations	1,472	1,472	1,472	1,472	1,472	1,472	1,472
R-squared	0.130	0.131	0.131	0.132	0.131	0.131	0.131

Notes. OLS regression results. Models 3 and 4 estimate the effect of an enforcer's injury on team performance, relative to all other injured players. For Models 5 to 7, the Injury x Enforcer coefficient can be interpreted relative to the omitted category of injured captains (Model 5), centers (Model 6), and goalies (Model 7). All regressions include fixed effects for each injury and each opponent. Robust player adjusted standard errors in parentheses. $^{+}p < 0.1$, $*p < 0.05$, $**p < 0.01$.

Table 4.
OLS Regression Results of Team Performance on Enforcer Replacement

Dependent Variable: *Team points per game*	(1)	(2)	(3)
Team past performance	2.491**	2.494**	2.492**
	(0.155)	(0.155)	(0.155)
Opponent past performance	-0.811**	-0.811**	-0.812**
	(0.056)	(0.056)	(0.056)
Team penalties	-0.003*	-0.003*	-0.003*
	(0.001)	(0.001)	(0.001)
Home team	0.232**	0.231**	0.231**
	(0.016)	(0.016)	(0.016)
Injury	-0.008	-0.006	-0.006
	(0.021)	(0.021)	(0.021)
Post-Injury	0.002	0.014	0.012
	(0.008)	(0.010)	(0.010)
Injury x Player performance	-0.163**	-0.164**	-0.164**
	(0.053)	(0.053)	(0.053)
Injury x Player TOI	0.001	0.000	0.000
	(0.002)	(0.002)	(0.002)
Injury x Enforcer	-0.102	-0.180	-0.182
	(0.097)	(0.121)	(0.121)
Replacement	-0.244**	-0.199*	-0.207*
	(0.091)	(0.097)	(0.097)
Replacement x Enforcer		0.420	0.804**
		(0.310)	(0.301)
Post-Injury x Replacement		-0.093*	-0.075
		(0.047)	(0.047)
Post-Injury x Enforcer		0.048	0.151**
		(0.052)	(0.045)
Post-Injury x Replacement x Enforcer			-0.652**
			(0.249)
Constant	-0.978**	-0.984**	-0.982**
	(0.202)	(0.202)	(0.202)
Injury FE	Yes	Yes	Yes
Opponent FE	Yes	Yes	Yes
Game Observations	15,067	15,067	15,067
Injury Observations	1,472	1,472	1,472
R-squared	0.126	0.127	0.127

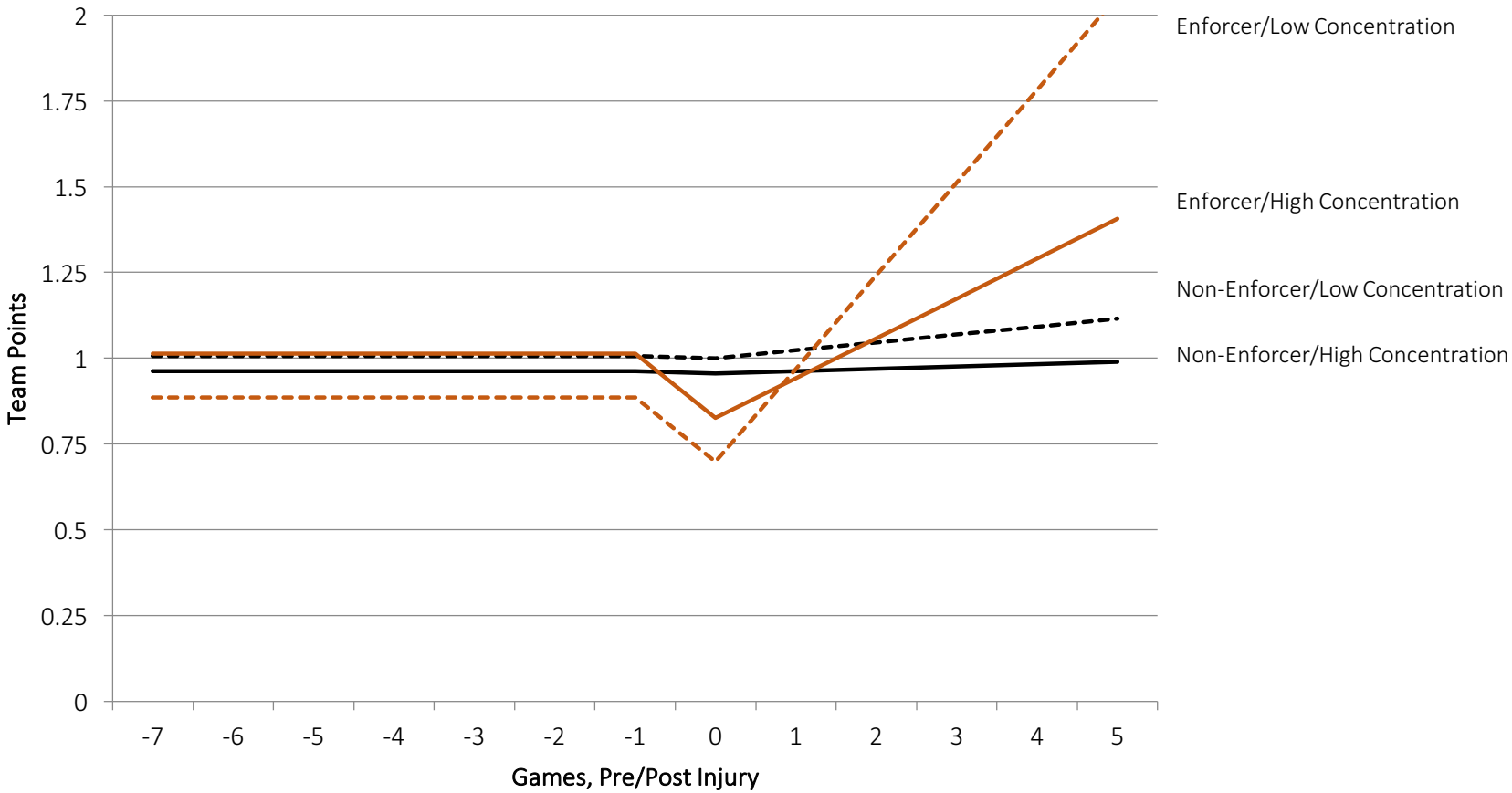
Notes. OLS regression results. All regressions include fixed effects for each injury and each opponent. Robust player adjusted standard errors are in parentheses. *$p < 0.05$, **$p < 0.01$.

Table 5.
OLS Regression Results of Team Performance on Enforcer Team Experience

Dependent Variable: *Team points per game*	(1) Enforcers	(2) Enforcers	(3) Captains	(4) Centers	(5) Goalies
Team past performance	4.465**	4.318**	2.276**	2.552**	2.242**
	(1.514)	(1.544)	(0.479)	(0.319)	(0.485)
Opponent past performance	-1.909**	-1.853**	-0.521^{+}	-0.646**	-0.819**
	(0.492)	(0.508)	(0.296)	(0.121)	(0.187)
Team penalties	0.006	0.008	-0.005	-0.010**	-0.005
	(0.006)	(0.006)	(0.003)	(0.002)	(0.004)
Home team	0.333**	0.337**	0.267**	0.207**	0.199**
	(0.094)	(0.093)	(0.068)	(0.033)	(0.062)
Injury	-0.432	-0.545*	0.002	0.058	-1.288
	(0.281)	(0.208)	(0.096)	(0.056)	(0.810)
Injury x Player performance	-0.062	-0.327	-0.545*	-0.364*	-3.469
	(0.519)	(0.407)	(0.257)	(0.141)	(2.240)
Injury x Player TOI	-0.010	-0.026	0.018	0.005	0.006
	(0.026)	(0.022)	(0.014)	(0.010)	(0.006)
Injury x Team experience	-0.253*		0.018	-0.001	0.084
	(0.124)		(0.022)	(0.017)	(0.056)
Injury x League experience		-0.011			
		(0.049)			
Constant	-1.713	-1.672	-0.771	-1.160**	-0.504
	(1.518)	(1.535)	(0.772)	(0.432)	(0.634)
Injury FE	Yes	Yes	Yes	Yes	Yes
Opponent FE	Yes	Yes	Yes	Yes	Yes
Game Observations	334	334	705	3,175	891
Injury Observations	39	39	83	376	104
R-squared	0.272	0.263	0.177	0.146	0.178

Notes. OLS regression results. Models 1 and 2 restrict the sample to only include injuries to enforcers, Model 3 only includes team captains, Model 4 only includes center forwards and Model 5 only includes goaltenders. All regressions include fixed effects for each injury and each opponent. Robust standard errors are in parentheses. $^{+}p < 0.1$, $*p < 0.05$, $**p < 0.01$.

Figure 1.
Estimated Team Performance Before and After Player Injury, by Player Role (Enforcer vs. Non-Enforcer) and Replacement



Notes. Prototypical team performance trajectories for player injury, at low (25th percentile) and high (75th percentile) values for role replacement (team penalty concentration). The dependent variable is the number of team points earned, per game. Game = 0 is the first full game the player missed due to injury.

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