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SANCTIONING IN THE WILD: RATIONAL CALCULUS AND RETRIBUTIVE INSTINCTS IN GOURMET CUISINE

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Why do we sanction norm violations? Despite near universal agreement on the role of sanctions for maintaining norms of cooperation, scholars hotly dispute whether individuals sanction based on a rational calculus or because of strong retributive instincts. In this paper we report on a mixed-method field study examining sanctioning behavior. Our goal is to extend theories of sanctioning by evaluating the conditions under which individuals are more likely to administer a sanction in response to a norm violation. To guide the development of our hypotheses, we engage in a qualitative examination of sanctioning decisions in the context of gourmet cuisine. We then test our predictions in a field experiment involving more than 500 gourmet chefs in Italy. Our results suggest that individuals follow retributive instincts, but they also engage in cost–benefit calculations. Indeed, we find that the two logics of sanctioning jointly influence participation in social exchange. Recognizing their own tendency to sanction at a cost, individuals avoid circumstances that could trigger the need for costly sanctions.

Scholars argue that violations of norms must be sanctioned if norm-governed social exchange is to succeed (Guler, Guillén, & Macpherson, 2002; Horne, 2004; Ingram & Clay, 2000; Ostrom, 1990). As noted by Ingram & Clay (2000: 538), sanctions "[give] norms their teeth," and thereby discourage defection from normative rules and encourage beneficial cooperation. Because of the perceived importance of sanctions, numerous authors have sought to clarify when and why they occur; in addition, the theoretical and empirical literature now includes hundreds of studies (see Henrich, Boyd, Bowles, Camerer, Fehr, & Gintis, 2004, for a review). Yet, despite this effort, the determinants of sanctioning remain hotly disputed.

The debate has tended to break roughly along a divide between scholars who believe sanctioning is governed by "strong" reciprocity instincts, driven by a desire for retribution, and those who believe sanctioning is governed by "weak" reciprocity instincts, driven by enlightened self-interest (Guala, 2012). The first group of scholars argues that retributive instincts cause some individuals to sanction those who deviate from cooperative behavior, even when sanctions entail a substantial cost for the individuals administering them (Fehr & Gächter, 2000, 2002). For support, they point to numerous experimental studies which demonstrate that subjects are willing to pay a cost to sanction defectors (e.g., Falk, Fehr, & Fischbacher, 2005; de Quervain et al., 2004). The second group of scholars argues that individuals choose to sanction based on a rational calculus; that is, when they determine that the value

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of future gains (e.g., from improved cooperation) makes it beneficial to do so (Axelrod, 1984; Trivers, 1971). This latter group point to studies of tit-for-tat behavior in repeated games as support for their arguments: players achieve better outcomes when they offer cooperation at the outset of the game and then reciprocate their counterpart's behaviors (e.g., Axelrod, 1980). Reciprocity appears here in its "weak" form, as it is based on a rational calculus rather than on retributive instincts; that is, it is the optimal strategy for an individual, and not a costly one.

The common practice of separating sanctioning behaviors into "strong" and "weak" reciprocity is useful for clarifying positions, but it masks a rich diversity of opinion. Many scholars recognize that both perspectives may have predictive power (e.g., Casari, 2012; Civai & Langus, 2012). Some point to moderating factors, such as culture and emotions, which might give more resonance to the role of instinctive sanctions (e.g., Read, 2012; Ross, 2012). Some also note that mechanisms such as self-regulatory institutions may encourage and sustain cooperation among individuals (Ostrom, 2012).

All sides of the debate note the need for more empirical evidence about sanctioning behavior "in the wild" (e.g., Gurven & Winking, 2008; Sigmund, 2007). While formalized experimental studies have been conducted in the field (e.g., Herrmann, Thoni, & Gächter, 2008; Marlowe et al., 2008), few studies have examined sanctioning in settings where "real" actors are embedded in a context that is strongly characterized by natural or situational factors. Some scholars argue that the apparent rarity of costly sanctions in the real world casts doubt on the predictive power of laboratory or stylized field experiments (Güney & Newell, 2012). Shaw and Santos (2012) note that without field evidence, laboratory findings cannot be interpreted properly; they call for more research on what contextual "cues influence one's willingness to punish" (2012: 39).

In this article, we report on a field study that examines sanctioning behavior. Our goal is to extend theories of sanctioning by evaluating the conditions under which individuals are more likely to administer a sanction in response to a norm violation. In this respect, our study refines, extends, and integrates arguments on both sides of the sanctioning debate. We conduct our research in the gourmet cuisine industry because it has a strong set of norms regulating social exchange (Fauchart & von Hippel, 2008). Our study uses a mixed-method approach (Edmondson & McManus, 2007; Guler, 2007) by incorporating both an inductive qualitative study and a field experiment. In particular, we exploit a qualitative study to inductively understand which factors guide an individual's choice to administer a sanction. We combine this evidence with existing theory to develop a set of testable hypotheses. We then go to the field with a quantitative approach and test our predictions by means of a scenario-based experiment (Di Stefano, King, & Verona, 2014; Florey & Harrison, 2000; Gomez, Kirkman, & Shapiro, 2000; Schminke, Ambrose, & Noel, 1997) involving more than 500 gourmet chefs in Italy.

We believe our study makes several contributions. First, we add to the debate on "strong-reciprocity" versus "weak-reciprocity" explanations for sanctioning by showing that *both* types influence behavior, and indeed combine in a surprising way. For many circumstances, we find evidence consistent with a cost–benefit logic for sanctioning. In some cases, however, individuals appear to engage in costly sanctioning in the absence of any apparent benefit. Interestingly, we find that the two logics jointly influence participation in social exchange: recognizing their own tendency to engage in costly sanctioning, individuals choose to avoid certain social exchanges.

Second, we find a surprising contributor to the cost of sanctioning. Scholars have generally predicted that sanctioning will be perceived as socially legitimate and hence be supported by the community (e.g., Ostrom, Walker, & Gardner, 1992; Panchanathan & Boyd, 2004). After all, to the extent that norms benefit community members, those who sanction violators are providing a community service. In turn, community support should reduce the costs associated with administering sanctions (e.g., Gürerk, Irlenbusch, & Rockenbach, 2006; Yamagishi, 1986). Contrary to these expectations, we find that community members often doubt the legitimacy of a sanction, and thus potential norm enforcers fear the community's response. In our empirical context, sanctions can be misinterpreted as norm violations. Chefs may sanction violations by refusing to provide material help and information in the future, but these refusals run counter to the industry's norms of cooperation. Fearing that their actions will be misinterpreted, individuals tend to punish violations only when the community is more likely to believe the sanction is legitimate and not itself a norm violation. In this respect, our study extends previous research which examines the "legitimacy loss" that may derive from *violating* a norm, by showing that a loss of legitimacy may also, and paradoxically, derive from *sanctioning* a norm violation

(Elsbach, 1994; Jonsson, Greve, & Fujiwara-Greve, 2009; Sullivan, Haunschild, & Page, 2007).

Third, our study contributes to recent research on social norms as potential substitutes for legal intellectual property rights. Previous studies have argued that, in these contexts, social norms may prevent misuse of private knowledge by dictating how to make appropriate use of it once it has been transferred (Fauchart & von Hippel, 2008; Loshin, 2008; Oliar & Sprigman, 2008). More recently, studies in these contexts have shown that people choose to transfer private knowledge to counterparts based on the expectation that those counterparts will abide by social norms (Di Stefano, King, & Verona, 2014). We contribute to this literature by examining how norms dictating appropriate use of transferred knowledge are maintained.

THEORETICAL BACKGROUND

Many scholars are interested in how social exchange is regulated by social norms and other decentralized institutions (Bettenhausen & Murnighan, 1991; Coleman, 1990; Ellickson, 1991; Elster, 1989; North, 1990; Ostrom, 1990; Reno, Cialdini, & Kallgren, 1993). In general, they argue that social norms can act as a critical lubricant for social exchange if, and only if, adherence to the normative rule is enforced (Greif, 1993; Horne, 2004; Ostrom, 1990). Research suggests that sanctions are more effective than rewards for enforcing norms (Andreoni, Harbaugh, & Vesterlund, 2003). Ethnographic research shows that sanctions vary widely, from verbal reproach and gossip to withdrawing cooperation, social ostracism, and physical violence (Boehm, 1999). Scholars also propose that the cost of enforcing norms is borne by the enforcer in a number of ways and to varying degrees, including emotional distress, financial loss, and even bodily harm (Horne, 2004).

Why then do people sanction norm violators? What pushes them to bear the costs of sanctions if they can simply wait and freeride on chastisement administered by their peers? This question is central to understanding human cooperation, which explains the widespread interest in sanctioning and the burgeoning theoretical and empirical literature about "weak" and "strong" theories of reciprocity, where reciprocity is defined as the "tendency to respond nice to nice actions and nasty to nasty actions" (Guala, 2012: 1).

Theories of "weak" reciprocity gained prominence when both economists and biologists began studying interactions in repeated dilemma games. For example, tournaments run by Robert Axelrod (1984) showed that a rudimentary rule of reciprocity, "tit-for-tat" punishments for defection and rewards for cooperation, could lead to sustained cooperation. Among biologists, research on "reciprocal altruism" (Trivers, 1971) covered similar ground. These scholars argued that organisms that reciprocate punishment have better chances of survival. The rational logic of both findings was partially formalized in the "folk theorem" (Fudenberg & Maskin, 1986), which shows that the cost of administering a sanction can be rational if it ensures that defection has a lower payoff than cooperation.

An alternative to this rational view of sanctioning is provided by studies in the "strong" reciprocity tradition. Proponents of this explanation argue that cooperation can be achieved even when it represents a suboptimal strategy, because some individuals, so-called "strong reciprocators," will sanction norm violators even when sanctioning does not maximize their private return (Gintis, Boyd, Bowles, & Fehr, 2005; Henrich et al., 2004). These scholars argue that automatic mechanisms—for example, emotions, internalized norms, or social preferences—may be so powerful that strategic considerations are bypassed (Frank, 1988; Hirshleifer, 1987). Strong evidence in favor of this explanation is provided by laboratory experiments which show that players will forgo gains to sanction another player for violating rules of fairness (e.g., Fehr & Fischbacher, 2004, 2005).

The two theories of reciprocity give rise to different predictions regarding what would increase an individual's willingness to administer a sanction. If one follows a weak-reciprocity argument, the shadow of the future (as in tit-for-tat strategies) and the presence of social support for sanctioning (as in the case of institutions with coordinated sanctioning) are of central importance. On the other hand, if one follows a strong-reciprocity argument, the role of a psychological desire for retribution becomes pivotal (see Carlsmith & Darley, 2008, for a review).

Recently, the debate between these two positions has become heated. In his review of reciprocity research, Guala (2012: 1) noted that costly sanctions appear to be "rare outside the laboratory." He also reviewed evidence that sanctions are not costly in the real world and thus suggested that "strong reciprocity" theory may not hold predictive power "in the wild." This last observation inflamed the debate between proponents of the two theories of reciprocity, and scholars on both sides engaged in a dispute over the power of the two theories outside

the lab (see, for instance, the following commentaries to Guala, 2012: Boehm, 2012; Dreber & Rand, 2012; Güney & Newell, 2012; Johnson, 2012; Nikiforakis, 2012; Shaw & Santos, 2012). Regardless of their position, all agreed that more research is needed on sanctioning in context, and with actual participants. Consistent with this recommendation, we went to the field to take a closer look at the choice to sanction. We use qualitative evidence to inform our understanding of the motives that push people to administer sanctions, and then test the resulting hypotheses through a scenario-based experiment involving industry players. This approach allows us to combine the external validity and realism of a field study with the internal validity and inference power of a randomized experiment.

QUALITATIVE STUDY: INSIDE THE CHOICE TO SANCTION

To conduct our research, we needed an industry with many comparable actors, the existence of collaborative exchange, and norms to maintain collaboration. The gourmet cuisine industry proved to be ideal for our purposes. To maintain their creativity, chefs benefit from a vibrant exchange in culinary knowledge in the form of recipes and cooking techniques. However, if these inventive ideas are likely to be misappropriated, chefs have no incentive to share them; since no legal system of intellectual property rights covers culinary knowledge, transferred ideas are subject to misuse and further distribution. Norms in the industry, scholars argue, help encourage exchange by regulating when and how chefs can use transferred knowledge (Fauchart & von Hippel, 2008). These norms provide "mental copyrights" that encourage innovation and exchange (Di Stefano, King, & Verona, 2014).

Three central norms regulate how transferred knowledge should be used in the gourmet cuisine industry (Fauchart & von Hippel, 2008). If a chef transfers information about a recipe or a cooking technique to a colleague, expectations are that this colleague: (1) will *not copy exactly* the recipe or cooking technique, but will use it as a source of inspiration to develop something new; (2) will *cite the source* of inspiration for an adapted recipe by including the original chef's name in its menu entry; and (c) will *not pass on* the information to a third party without previously asking for permission to the original chef.

Notwithstanding the importance and prevalence of these norms, violations do occur. One famous example made it into newspapers a few years ago (Murray, 2008). It involved a chef near Boston, Massachusetts. According to his colleagues, he visited the best restaurants in town, pretended not to be a chef, and asked for detailed information about the food he was served. He requested recipes for famous dishes from each one and subsequently opened his own restaurant where he served very similar items. When such a norm violation occurs, consistent with previous accounts (Fauchart & von Hippel, 2008), three types of sanctions are commonly used: (1) refusing future knowledge transfers; (2) cutting off material exchanges, including help with missing ingredients or personnel; and (3) sharing negative gossip with colleagues in the community.

To better understand the choice to sanction norm violations, we engaged in a qualitative study of gourmet chefs. Our qualitative analysis is based on three main data sources, which are summarized in Table 1. First, we acquainted ourselves with the industry, its specificities, and its main players through industry-related publications, including books on the industry and on specific chefs, articles published in the specialized national and international press, and items in the related hospitality literature. We also attended a number of conferences on gourmet cuisine and, more generally, gastronomic innovation. Second, we conducted in-person interviews with chefs to investigate how social norms function and are enforced. Third, we used archival sources, such as internal documents from our interviewees, to triangulate interview data.

We conducted in-person interviews with chefs from top restaurants in the metropolitan areas around Milan and Boston, with interviews conducted in Italian and English, respectively. We selected these two locations because they: (a) constitute an extension of previous research on gourmet cuisine (e.g., Durand, Rao, & Monin, 2007; Rao, Monin, & Durand, 2005); (b) have a thriving gourmet industry; (c) have a heterogeneous culinary scene; and (d) allowed convenient access. In Italy, we identified subjects to interview using the Michelin Guide, a reference point for gourmet cuisine (Ferguson, 1998); we interviewed chefs at all restaurants in Milan that had received at least one Michelin star. Obtaining a Michelin star is a sign of creativity and quality, and is considered one of the top achievements a chef can attain. In the United States, where Michelin Guide coverage is scarce, we turned to the Mobil Travel Guide and the Zagat guide, which are based on the judgment of experts and consumers, respectively. The Mobil Travel Guide rates restaurants on a one-to-five-star

TABLE 1
Qualitative Data Collection

Data Source	Type of Data	Use in the Analysis
Industry-related publications	-Three book types: (a) books by top chefs on their approach (n=3); (b) recipe books by top chefs (n=14); (c) books on the industry (n=4).	- Understand differences across players and approaches to cuisine. - Understand industry specificities.
	-Articles in national and international press	- Understand industry specificities.
	-Academic literature in three areas: (a) hospitality; (b) marketing; (c) management.	- Understand industry specificities. - Understand the business.
Interviews	-First round: Winter 2008–Spring 2009. Second round: Winter 2009–Fall 2010. (See Table 2)	- Investigate the functioning and enforcement of social norms.
Archival sources	-Internal documents shown at location by interviewees (reports, menus, recipe archives).	- Triangulate interview data.
	-Conferences on Italian cuisine (four meetings, Milan, May 2010) and on innovation in cuisine (one meeting, Boston, September 2010).	- Understand industry specificities. - Meet with industry players; i.e., chefs, journalists, entrepreneurs.

scale, and its three-, four-, and five-star ratings are seen as roughly equivalent to the Michelin one-, two-, and three-star ratings. Because of the popularity of guides based on consumer comments, we also used the Zagat guide as a reference point. Restaurants in the Zagat guide are rated on a 30-point scale. Consistent with our interest in high-end cuisine, we interviewed chefs at restaurants rated at least 26 for their food. Following these criteria, we selected 11 informants: eight in the metropolitan area of Milan and three in metropolitan Boston. To ensure that our results would not be based on regional characteristics, we conducted a second round of more informal interviews with chefs from 12 additional locations throughout Italy and the United States.[1] Our final set of informants included 23 chefs. Table 2 summarizes the characteristics of our informants.

We followed traditional methodological prescriptions for collecting data through personal interviews (e.g., Lee, 1999). All interviews were conducted by at least two authors to allow triangulation (Patton, 2002). The interviews, which lasted 45 minutes to two hours, were held at the restaurants in which our informants were working as head chefs. To increase the accuracy of their responses, we promised anonymity to all respondents (Siegel, Waldman, & Link, 2003). The interviews were semi-structured, following a path of key questions referring to the chef's experiences and background, innovation in the context of gourmet cuisine, and practices of knowledge transfer with other chefs. We then discussed expectations about social norms and sanctioning, starting with broad questions and moving to increasingly more specific ones (Spradley, 1979). We avoided asking subjects explicit questions about the issues we thought were relevant, but asked them to elaborate and provide examples to increase the likelihood they might touch on these topics.

We recorded and transcribed all of our first-round interviews, yielding a total of 187 pages of single-spaced transcripts. In analyzing the interview data, we followed an iterative content-analysis process (Glaser & Strauss, 1967; Miles & Huberman, 1994). First, we completed a short description of each interview to highlight patterns, demographic information, and key points. These steps acquainted us with the body of material we collected and later facilitated our manuscript coding. We began with in-vivo codes generated directly from the interview material (Gioia & Chittipeddi, 1991; Locke, 2001). Examples included "anger," "damage," "stop helping," "stop talking," and "gossip." We gradually combined in-vivo codes into first-order categories (Gioia & Chittipeddi, 1991; Locke, 2001). For instance, "participation in social exchange" included quotes

[1] The purpose of this second round was to ensure the generalizability of our results outside of Milan and Boston, collect additional evidence with respect to the phenomenon of interest, and get feedback about our preliminary intuitions. Three Italian informants were listed in the Michelin Guide but not awarded stars, and two U.S. informants were located in rural areas and were not included in the Mobil Travel Guide or in the Zagat guide. We chose to include them in our analysis in order to gain further generalizability of our findings. Four of our nine U.S. informants won or were nominated for the James Beard Foundation Awards as Best Chefs in America. These awards are also known as the "Oscars of the food world" (http://www.jamesbeard.org/awards/about).

TABLE 2
Informants' Characteristics

Informant #	Location	Quality	Timing
		First Round of Interviews	
1	Italy, Milan area	Michelin: 2 stars	December 2008
2	Italy, Milan area	Michelin: 2 stars	January 2009
3	Italy, Milan area	Michelin: 2 stars	January/May 2009
4	Italy, Milan area	Michelin: 1 star	January/Mar 2009
5	Italy, Milan area	Michelin: 2 stars	February 2009
6	Italy, Milan area	Michelin: 1 star	February/March 2009
7	Italy, Milan area	Michelin: 1 star	February/March 2009
8	Italy, Milan area	Michelin: 1 star	April 2009
9	U.S., Boston area	Mobil: 4 stars; Zagat: 26; James Beard: winner	February 2009
10	U.S., Boston area	Mobil: 3 stars; Zagat: 28; James Beard: winner	February/April 2009
11	U.S., Boston area	Mobil: 3 stars; Zagat: 27; James Beard: finalist	February 2009
		Second Round of Interviews	
12	Italy, Rural area	Michelin: 1 fork	January 2009
13	Italy, Urban area	Michelin: 1 fork	March 2009
14	Italy, Urban area	Michelin: 1 fork	December 2009
15	Italy, Rural area	Michelin: 2 stars	September 2010
16	Italy, Urban area	Michelin: 1 star	September 2010
17	Italy, Rural area	Michelin: 1 star	September 2010
18	U.S., Rural area	Zagat: n.a.	February 2009
19	U.S., Urban area	Mobil: 3 stars; Zagat: 27; James Beard: winner	August 2009
20	U.S., Urban area	Zagat: 28 (food)	October 2009
21	U.S., Rural area	Zagat: n.a.	June 2010
22	U.S., Urban area	Zagat: 27 (food)	July 2010
23	U.S., Urban area	Zagat: 26 (food)	September 2010

referring to exchanges of knowledge among chefs, while "gossiping" included quotes referring to instances in which chefs violated social norms and were denigrated by their colleagues. In a further round of coding, we tentatively combined first-order categories into fewer, theoretically grounded second-order categories (Strauss & Corbin, 1998). For instance, we realized that the degree of competition between two industry players was a function of the overlap of customers, which in turn depended on both physical proximity and similarity in positioning. Furthermore, we noticed that chefs described different methods of administering sanctions (e.g., gossiping, blackballing); thus, we consistently combined these into a single code related to "administration of sanctions." Ultimately, we connected our key categories into an explanatory framework that linked the antecedents and consequences of sanctioning. Interview notes and other documents collected while running the interviews were used to guide and refine our interpretation of the key categories and their integration into an explanatory framework (Jick, 1979). The process was subject to multiple iterations, as we constantly updated and revised the emerging framework based on evidence collected in subsequent interviews. The authors also met to discuss and resolve potentially divergent interpretations of transcripts. Following methodological prescriptions (Hirschman, 1986; Lincoln & Guba, 1985), we reviewed our results with informants to check the credibility of our interpretations. Table 3 reports the key components of the framework, with definitions, examples, and the frequency with which each component was found.

In the next sections, we describe the attitudes of our informants toward sanctioning, the conditions they identified as being conducive to sanctioning, and the consequences of sanctioning on their decision to participate in norm-regulated social exchange. We first provide evidence on the extent to which sanctions are perceived to be costly for those who administer them. We then present the qualitative evidence that we gathered, organized around the two perspectives of "weak" and "strong" reciprocity.

TABLE 3
The Emerging Framework: Categories Uncovered by the Qualitative Study (First Round of Interviews)

Component	Definition	Example Comment	Frequency (n = 11)
Sanctioning of Norm Violations			
Propensity to sanction a norm violation	Extent to which a harmed party is likely to sanction a norm violation	"You might say to somebody who has worked for you for three years who is thinking about going to work for that guy, you might say, 'I would not recommend you go there . . . because the chef just copies.'"	4
Weak-reciprocity Mechanisms			
Reputation of norm violator	Extent to which violator has a strong reputation; i.e., is broadly recognized for the high quality of his capabilities and outputs	"The idea of this dish of mine was 'used' by [a highly reputed chef], and that was annoying because, in my perspective, such an important chef should not copy dishes in such an open way. [Interviewer: If he would ask you today for another recipe?] I would be glad to pass it to him. [Interviewer: Even though he did not recognize your paternity on that dish he copied?] Yes. You know, he is [a name in the industry]."	6
Public scrutiny of norm violator	Extent to which violator is able to attract significant public attention	"I think everyone is very careful with [giving credit to the author of the recipe]. When people are not careful with that, it comes back to them, whether the chef happens to walk in the restaurant and see it, or someone tells them about it, 'Hey, someone has got this on their menu over there.'"	6
Competition with norm violator	Extent to which violator is a direct competitor; i.e., targets same customers	"If we had someone here located at a distance of 100 meters cooking the same things that we cook here . . . well, that would be problematic."	2
Strong-reciprocity Mechanisms			
Severity of norm violation	Extent to which violation involves knowledge that is more central to an actor's value proposition – knowledge an actor feels is really his own, characterizes him strongly, and positions him in a unique way.	"[He] copied half my menu. I did not see the food on the plate; I was just reading it [in a food magazine]. I was like: whoa! So I sent him a pretty terse letter after that."	4

Are Sanctions Perceived to be Costly?

Two of the most contentious issues in the debate on sanctioning "in the wild" are whether sanctions are costly and whether those costs influence the decision to sanction (Gintis et al., 2005; Henrich et al., 2004). Theories of weak reciprocity suggest that actors consider sanctioning costs while choosing whether to administer a sanction. Theories of strong reciprocity suggest there are conditions under which individuals are willing to put cost considerations aside and sanction based on a desire for retribution. Thus, a precondition to the debate we investigate is that sanctions within our context are considered costly.

Fortunately, in our context, sanctions are indeed viewed as costly. All of the chefs we interviewed reported that individuals who administer sanctions bear significant costs. Some of these costs were the negative feelings sanctioning caused. For example, when talking about the propensity of a colleague to sanction norm violations, one chef commented: "He gets angry. . . I'd rather be happy." The most common and important costs reported by chefs related to the effect of sanctioning on the community's perception. Although chefs who sanction are acting in the community's interest by helping to maintain a valuable norm, their behavior was often reported in a condescending manner. Female chefs, for example, often suggested scornfully that sanctioning chefs are more likely to be male. Other chefs expressed a belief that sanctioning is more common

among colleagues with a weak character. As one informant put it, sanctioning "depends a lot on how 'mature' you are."

Because of these costs, many chefs reported being reluctant to sanction norm violations. Chefs who said they would sanction were defensive about their behavior and offered justifications for their actions, as if they felt it was intrinsically illegitimate to punish a misappropriation of transferred knowledge. For instance, a chef described why he sanctioned a colleague who copied several of the distinctive dishes on his menu:

> Why do I care? Well, we have pride; we do care. I do not need people stroking me, but I do want to get credit for... I mean, I work 110 hours a week. I make so many sacrifices. I would not know what to do with myself if I did not do what I did [sanction]. At the end of the day, I go home and I look my wife and my baby in their eyes and myself in the mirror.

Weak and Strong Reciprocity in the Wild

The central issue in the debate on sanctioning in the wild concerns the effect of strong and weak reciprocity instincts; that is, whether individuals sanction because they desire retribution or because of rational self-interest. The qualitative evidence that we gathered during our field study supports both views. On the one hand, we heard our informants engage in cost–benefit calculations when elaborating on their decision to sanction a norm violation. In particular, they seemed to resort to rational calculus when violations were committed by reputable chefs and by chefs whose behavior was highly visible to peers and competitors. On the other hand, we also witnessed cases in which our informants seemed to completely forget rational calculus and simply become inflamed by a norm violation. Severe violations seemed particularly likely to trigger an emotional response.

The presence of these two types of response, one rational and the other emotional, corresponds with the distinction between different modes of information processing, which are variously referred to as fast and slow, type 1 and type 2, or intuitive and reflective (Evans & Stanovich, 2013; Kahneman, 2011). Research on information processing shows that people combine two different processes when interpreting information (Slovic, Finucane, Peters, & MacGregor, 2004). In particular, type 1 processes are fast, intuitive, automatic, and independent of cognitive ability. Type 2 processes, in contrast, are slow, reflective, controlled, and correlated with cognitive ability. Our qualitative evidence suggests that the characteristics of a violation stimulate different types of information processing, which in turn trigger different types of reciprocity.

Weak reciprocity. Rational calculus or analytical information processing is well exemplified by the "weak reciprocity" perspective, where individuals deliberately choose to sanction a norm violation based on considerations about the costs and benefits involved. Previous literature has argued that actors may consider the support and approval of community members before deciding to sanction (Axelrod, 1986; Boyd, Gintis, & Bowles, 2010; Casari & Luini, 2009; Coleman, 1990). For example, actors may consider the existence of metanorms (Coleman, 1990) to reward those who chastise norm violations.

As predicted by weak reciprocity theory, chefs reported considering the response of the community of their peers when evaluating the costs and benefits of sanctioning, but they did so in a manner contrary to common expectations. Rather than reporting that they expected community support, our respondents stated they feared other chefs might misinterpret sanctions, view them as illegitimate, and *disparage* those who administered them. Because community members cannot always observe original norm violations, sanctions can be viewed as unjustified, or even as violations themselves. As a result, before administering a sanction, chefs consider how other community members will interpret their actions. Two factors are particularly important in forecasting this interpretation: (a) the reputation of the violator, and (b) the level of public scrutiny of the violator.

The chefs we interviewed reported being afraid to sanction a highly regarded chef because community members might doubt the validity of the initial violation or infer that it had been misinterpreted or exaggerated. Chefs reported that they assumed the community would believe highly regarded chefs to be more creative, and thus less likely to misuse transferred knowledge. The chef's reputation acts as a kind of signaling device (Kirmani & Rao, 2000), allowing community members to assess the individual's propensity to violate a norm (Bunn, Caudill, & Gropper, 1992). One chef explained:

> It used to happen that chefs did not want to cook their own recipes in front of other chefs, that they kept them secret. But why was that? This happened because the chef had only those ones [ideas], and if someone copied them, then he would not have had any more ideas, anything new to serve.

As a result of the community's prior expectation that a highly reputed chef has little need to violate norms governing knowledge use, sanctioning a highly reputed chef can prove costly. Consider the following account, in which one informant highlighted a fear of sanctioning a famous chef who copied a dish:

> The idea of this dish of mine was "used" by [a highly reputed chef], and that was annoying because, in my perspective, such an important chef should not copy dishes in such an open way. [Interviewer: If he would ask you today for another recipe?] I would be glad to pass it to him. [Interviewer: Even though he did not recognize your paternity on that dish he copied?] Yes. You know, he is [a name in the industry].

Such reports are consistent with existing accounts about the influence of reputable players (Kremp, 2010; Rindova, Williamson, Petkova, & Sever, 2005; Wilson, 1985), according to which, especially in contexts in which reputation is relevant (Rao, Monin, & Durand, 2003), sanctioning highly reputed players bears a higher social cost. The higher cost derives in part from the expectation that, when a reputable player is accused, the community will afford him or her the benefit of the doubt. Hence, our first hypothesis postulates that the reputation of the violator will have a negative effect on the propensity to sanction a norm violation:

> *Hypothesis 1. The higher the reputation of a norm violator, the lower the propensity to sanction a norm violation.*

According to our informants, a second factor affecting community support for a sanction is public scrutiny of the presumed norm violator; that is, the level of public attention the violator attracts (Rindova, Pollock, & Hayward, 2006). Many scholars have theorized that public scrutiny will influence the propensity for individuals to chastise norm violators (Ostrom, 1990). In particular, scholars have argued that public scrutiny may reduce the need for individuals to administer a sanction by increasing the likelihood that third parties will detect and reprimand the violation (Coleman, 1990; Piskorski & Gorbatai, 2011; Schlager, 2002). Some scholars have even assumed that, when public scrutiny is high, direct sanctions become unnecessary because violations are sanctioned automatically by online communities, customers, and local reviewers (Fauchart & von Hippel, 2008).

The chefs we interviewed reported a logic contrary to these theories. They suggested that public scrutiny would increase, rather than decrease, sanctioning, because public awareness of a violator's behavior reduces the risk that delivering a sanction will be perceived as illegitimate. When the behavior of the violator is more publically visible, they suggested, a sanction is less likely to be perceived as a violation in itself (or disproportionate to the violation). This argument resonates with the intuitions offered by other studies that examine contexts in which uncertainty is dominant, such as criminality. For instance, studies have shown that criminals may decide to administer exemplary sanctions if the behavior of the violator has drawn a high level of attention (Gambetta, 2011).

Thus, in contrast to previous predictions in the literature, but consistent with results from our qualitative inquiry, we hypothesize that public attention will have a positive effect on the propensity to sanction:

> *Hypothesis 2. The greater the level of public scrutiny of a norm violator, the higher the propensity to sanction a norm violation.*

Another line of argument in the weak-reciprocity tradition is that a credible threat of sanctioning should hold social norms in place and ultimately provide future benefits from cooperation (e.g., Axelrod, 1984). When individuals have a long-term exchange relationship, the presence of such a shadow of the future makes a credible threat of sanctioning deter norm violations, thereby reducing the need to administer sanctions and increasing the value of norm-governed exchange (Guala, 2012).

Our qualitative evidence suggests that actors consider the shadow of the future when evaluating sanctioning violations committed by their competitors. The logic of sanctioning competitors fits with two theoretical explanations. Competition indicates an ongoing relationship that is subject to tit-for-tat discipline; it also suggests a homogenous understanding of norms and sanctions. Competitive positioning often involves fixed investments in both the physical space (the location served) and the feature space (product or service attributes). Parties that overlap on these attributes are involved in an ongoing relationship (Gibbons, 2005). Beneficial behavior in such relationships can be maintained by proportional sanctions (Axelrod, 1984). The value of such sanctions is further enhanced by increased certainty about how others will interpret them, because similarity of positioning implies similarity of understanding and experience. Research on two-person games has shown that similar knowledge structures and backgrounds facilitate understanding of the responses of other players in prisoner

dilemma games (Ostrom, 2009; Richards, 2001). Aharonson, Baum, and Feldman (2007: 95) argue that "deeper insight into each other's situations and behavior" allow actors to better communicate strategies of cooperation and sanctioning.

Our informants emphasized the relatively higher benefits of sanctioning a competing violator. If a competing restaurant misuses transferred knowledge, that violation could have a greater economic impact on the offended party; for instance, in terms of lost revenues. This is implicit in the definition of competition: one side's gain is the other's loss. Our informants repeatedly suggested this line of argument when talking about their local competitors; i.e., similar restaurants located nearby. For instance, one chef expressed this concern by asking rhetorically: "How many restaurants with this kind of feeling can [the local area] handle? I don't think very many. So I wouldn't want any more of this kind of restaurant here." Or, as another stated: "If we had someone here located at a distance of 100 meters cooking the same things that we cook here . . . well, that would be problematic."

We also heard that competition provides a form of oversight by third parties, and this helps reduce concern that others will misinterpret sanctions. Speaking of two competitors, one chef commented: "You know, everybody knows where he got that idea and whom it really belongs to. Chefs would know it. Customers may not. But the press would know." This effect was reported to be particularly important when restaurants were proximate. As one informant put it: "You know, it is a small world. Everyone knows what everyone is doing."

Consistent with these reports, we hypothesize that a closer degree of competition with a norm violator will increase the propensity to administer a sanction:

> *Hypothesis 3. The higher the degree of competition with a norm violator, the higher the propensity to sanction a norm violation.*

Strong reciprocity. Proponents of "strong reciprocity" explanations claim that individuals are motivated to administer sanctions based on automatic mechanisms—such as emotions, internalized norms, social preferences, etc.—which may be so powerful that strategic considerations are bypassed (Frank, 1988; Hirshleifer, 1987). Under this perspective, we enter the domain of emotional responses or fast information processing, wherein individuals forego a rational calculus and sanction a norm violation based on their own emotional reaction. Many scholars in this tradition have emphasized the triggering role of a retributive logic (e.g., Baumard, 2012). For example, laboratory experiments have shown that sanctioning decisions are consistent with the principles of retributive justice: that "a person deserves punishment proportionate to the moral wrong committed" (Carlsmith, Darley, & Robinson, 2002: 284). This has led researchers to argue that "people may punish to satisfy their retributive desires, even when it is costly to do so" (Adams & Mullen, 2012: 15).

The chefs we interviewed reported cases in which they seemed to be driven by a need for justice, which would motivate them to sanction regardless of the costs. In fact, our informants consistently revealed an irrational, almost blind desire for revenge and retribution in response to particular kinds of violations. Whether this reaction was triggered depended on the severity of the violation, which in turn depended on the characteristics of the object of the violation; in this case, the type of knowledge being misused. Our informants consistently described violations as more severe when they entailed the inappropriate use of knowledge that was distinctive and idiosyncratic to the offended party.

The type of knowledge being misused drove this feeling of distinctiveness. Our interviews described grouping culinary knowledge into roughly three forms: recipes of generic dishes, recipes of "signature" dishes, and cooking techniques. While chefs noted that each type of knowledge, once transferred, was governed by social norms, they reported that misusing recipes of any type of dishes is perceived as a more severe affront to the offended party. This sense of damage is particularly salient for the recipes of signature dishes. A signature dish fully represents a chef's style and approach to cuisine, and as such it is usually included in the menu, independent of the season. Our informants reported feeling more hurt when information about their signature recipes was used inappropriately. For instance, when asked how they would respond if a colleague misused information about a signature dish, one chef responded: "I would say: Take out their knee caps! But no, I mean, it!" The chefs reported that the instinct for sanctioning would still hold even if the violation had no direct economic harm:

> You know, if one of my cooks was moving to [a different city] and they said . . . "I want to put your [signature dish] on the menu. I will give you credit for that. Is that okay?" . . . I might consider that. But if

> I went down and tasted it and they were doing it all wrong, then I would say, "You have to take it off."

Misuse of recipes for full dishes also could spur sanctioning, regardless of the economic impact. For example, one chef reported sanctioning a former sous chef for misusing recipes even though the restaurant the sous chef had opened was on the other side of the country. In contrast, our informants suggested that the inappropriate use of information about cooking techniques was a much less severe violation. As one informant told us, ultimately a technique "is just an aspect of the dish. It's not the actual dish."

Overall, we conclude that the nature of the object of the violation, and in particular its distinctiveness to the offended party, affects the severity of the norm violation and thereby influences the propensity to administer a sanction:

Hypothesis 4. The higher the severity of a norm, the higher the propensity to sanction it.

TESTING OUR HYPOTHESES

Sample

We identified high-end chefs in Italy using the Michelin Guide, the most reputed rating agency in the context of gourmet cuisine (Ferguson, 1998). Restaurants are included in the Guide if they satisfy a minimum standard of quality. All Guide restaurants are rated on a five-point (five "fork") scale for their "décor, ambience, and service." A small élite achieves recognition for their culinary excellence on a three-point, or three "star," scale. The 2009 Italian edition of the Michelin Guide included 2,529 restaurants; of these, 275 were awarded stars (236 had one star, 34 had two stars, and five had three stars). We invited each of these 2,529 restaurants to participate in our scenario-based experiment. Our response rate was equal to 21.1%, with 492 of the 534 surveys returned complete.[2] Our respondents were mainly male (82%), in a range of different ages (46 years on average, with a minimum of 23 and a maximum of 80), and with an array of star classifications (74 had restaurants with one star, 16 had two stars, and two had three stars). In 78% of the cases, the head chef who responded to the survey was also the owner of restaurant.[3]

As shown in Table 4, restaurants in our sample tended to be slightly more expensive and better rated than the average Michelin Guide restaurant. Note, however, that effect sizes (Cohen's d) are less than 0.5 in all cases, showing that although the differences between respondents and non-respondents are statistically significant, they are relatively small. This means that, consistent with previous research (e.g., Fauchart & von Hippel, 2008), our results may be slightly more applicable to chefs in higher-end restaurants. When we consider the regional attributes of the respondents and the population, we find neither statistically or economically significant differences. Results from our analyses show that respondents and non-respondents did not differ significantly in terms of agglomeration,[4] number of residents, or disposable income in the area in which they were located.

Experimental Procedure

We first telephoned the 2,529 head chefs to announce the administration of our scenario-based experiment, which was then mailed to each of them. The mailing included a cover letter introducing the study, the survey through which the experiment was actually administered, and a password granting access to a website hosting an online version of the survey. Each survey included two randomly assigned scenarios, and each of these scenarios were followed by questions regarding the propensity of the responding chef to sanction norm violations and the likelihood that he

[2] Note that 94% of respondents returned exactly two scenarios, with the remaining 6% returning more than two scenarios (having completed the survey both in paper form and online), for a total of 1,012 scenarios. Our analyses include all responses. Results are consistent if we restrict our analyses to respondents who returned exactly two scenarios.

[3] While the qualitative analysis is unique to this paper, data from the same field experiment are used in another of our manuscripts (i.e., Di Stefano, King, & Verona, 2014). The two studies look at different theoretical questions and have different dependent variables. They overlap in their use of certain common independent variables (notably the treatments administered through the scenario: *reputation*, *frequency of review*, *physical proximity*, and *similarity of positioning*). However, we make a different use of the variables *recipe* and *signature*, which are part of our independent variables here but are used as controls in the other publication. Finally, the two papers share the same set of control variables (with the exception of *innovativeness*, which appears in this paper only).

[4] We measure *agglomeration* based on the measure of geographic concentration suggested by Sorenson and Audia (2000), and computed only for the 20 nearest neighbors. Our measure is: $Agglomeration = \sum_{j=1}^{20} \frac{1}{D_{ij}}$, where D_{ij} is the great circle distance between firms i and j and the sum is computed for the j nearest 20 neighbors.

TABLE 4
Descriptive Statistics of Population and Sample

	Population (n = 2,529)		Respondents (n = 534)		Non-respondents (n = 1,995)		T-test		Cohen's d
	Mean	SD	Mean	SD	Mean	SD	t	Sig	D
Characteristics of Restaurant									
Forks	1.81	0.70	1.95	0.76	1.77	0.68	−5.36	0.00	0.25
Price[a]	44.60	17.53	48.52	1.89	43.54	16.00	−5.87	0.00	0.26
Stars	0.12	0.38	0.22	0.38	0.09	0.33	−6.95	0.00	0.36
Characteristics of Local Area									
Residents[b]	170.11	474.06	145.24	441.91	176.77	482.21	1.36	0.17	−0.68
Disposable income[c]	16.95	4.18	17.10	4.09	16.91	4.21	−0.93	0.35	0.05
Agglomeration	3.92	3.20	3.90	3.11	3.92	3.22	0.16	0.88	−0.01

[a] Average price, expressed in euros.
[b] Number of residents in the municipality, year 2010, millions.
[c] Average disposable income per taxpayer in the municipality, year 2007, thousand euros.

or she would transfer knowledge to a counterpart. The survey concluded with a set of questions about the respondent and the restaurant.

We introduced each scenario using a brief description of a fictitious restaurant whose characteristics were selected randomly and were not intended to represent a real restaurant. We further explained to the respondents that there was no right or wrong answer, and asked that they try to answer all questions. The scenario followed and described a restaurant and its head chef in terms of five attributes. Table 5 shows the list of attributes and describes the manipulated values. The assignment of scenarios was randomized both within and between subjects, as each respondent received a random combination of the five manipulations in the first scenario and a random combination of the five manipulations in the second scenario. We employed this randomization to reduce the potential for correlation between our treatments and other variables. Moreover, administering *two* independent scenarios to each respondent allowed us to use subject-level fixed effects in our analysis, thus removing potentially unobserved subject-level confounds (see model specification). In total, our method represents a between- and within-subjects mixed factorial design.

To design the scenarios and the questions, we drew on insights gathered during interviews with our qualitative informants. In particular, we worked together with our eight Italian informants from the first round of interviews to identify the constructs of interest and the most appropriate manipulations and measures. We conducted a second round of interviews with four of these chefs to ensure the face validity of our instrument. Finally, to confirm the validity of our instrument, we pretested our scenario-based experiment on a sample of 224 restaurants (not included in the final sample) and refined and simplified the survey based on the results of this test.

Variables and Measures

A comprehensive list of the variables employed in our experimental test, with details on their operationalization, is shown in Table 6.

The main variable of interest for our study is an individual's propensity to sanction a norm violation. We assess the *propensity to sanction* with a scaled measure of the respondent's propensity to sanction the violation described in the scenario. Consistent with previous reporting (Fauchart & von Hippel, 2008), our informants predominantly described three types of sanctions for violations of norms proscribing the use of transferred culinary knowledge, namely: (1) negative gossiping within the community; (2) refusing future requests for help; and (3) refusing future requests for information. In our experiment, we asked the surveyed chefs to identify the likelihood (measured on a seven-point Likert scale) that, should the chef described in the scenario commit a norm violation, they would sanction it using each of the three types of sanctions. We measured the variable after each of the two scenarios. Specifically, we asked chefs (in Italian): "If this chef copied the recipe exactly (copied the recipe for your signature dish exactly/applied the technique exactly; i.e., without, for instance, changing the dish or the ingredients to which it is applied), how likely is that you would: (a) provide NO more information; (b) provide NO more

TABLE 5
Manipulated Variables and Corresponding Treatments

	High	Low
Reputation	Zagalin[a]: cuisine rating 28. Comments: creative, innovative, unique style	Zagalin: cuisine rating 20. Comments: lacks imagination, unoriginal, ordinary style
Frequency of review	Frequently reviewed by local media and customers (among restaurants with more reviews)	Rarely reviewed by local media and customers (among restaurants with fewer reviews)
Physical proximity	Physically very close to your restaurant	Physically very distant from your restaurant
Similarity of positioning	Cuisine style and ambience similar to your restaurant	Cuisine style and ambience different from your restaurant
Experience	Chef has 20 years of industry experience	Chef has one year of industry experience

[a] Fictitious rating (derived from "Zagat" and "Michelin") equivalent to a rating from Zagat. It ranges from 0 to 30.

help (e.g., missing ingredients, emergency labor); (c) reveal what happened to other chefs?"[5] We averaged the three measures (one for each type of sanction) into a single measure, since the Cronbach's α supported the reliability for a single scale (α=0.77). We also conducted an analysis using each of the three measures separately. Our results are robust to these different specifications. In addition, note that each respondent was asked separately about the propensity to sanction violations of norms regulating the transfer of three types of knowledge; i.e., (1) the recipe of a dish, (2) the recipe of a signature dish, and (3) information about a cooking technique. To allow us to measure the effect of norm violations by severity, we marked the three different types of knowledge with dummy variables (*recipe*, *signature*, and *technique*).[6]

[5] Our variable is contingent on a violation having occurred; that is, we are not asking our respondents about their expectations that the counterpart will infringe any of the three norms. To show empirically that these two aspects are not confounded, we ran two additional robustness tests. First, we inserted a measure of these expectations in the regressions as a control. Our results were not affected by the presence of this variable. Second, we checked the correlation between the propensity to sanction and the expectation of norm conformance. The two variables are barely, and not significantly, correlated.

[6] This implies that for each respondent we have six observations of the propensity to sanction: propensity to sanction for recipe as stimulated by scenario 1 and by scenario 2; propensity to sanction for signature dish as stimulated by scenario 1 and by scenario 2; and propensity to sanction for cooking technique as stimulated by scenario 1 and by scenario 2. The scenario treatments were random and thus the errors are independent and identically distributed at the scenario/respondent level, but they are clearly related for the three observations within each scenario. We address this issue when discussing our model specification.

Hypothesis 1 predicted that the reputation of the violator would negatively affect the propensity to sanction. We manipulated *reputation* by describing the restaurant as either "Zagalin cuisine rating 28. Comments: creative, innovative, unique style" (high reputation), or "Zagalin cuisine rating 20. Comments: lacks imagination, unoriginal, ordinary style" (low reputation). We explained the name of the rating, "Zagalin" (a portmanteau of Zagat and Michelin), as equivalent to a Zagat rating, and ranging from 0 to 30. As a manipulation check, we asked respondents to evaluate on a seven-point Likert scale the extent to which the chef described in the scenario was likely to be considered highly reputed by colleagues. The manipulation was successful ($F(1, 1061)=57.00$, $p = 0.00$).

Hypothesis 2 predicted that a higher potential for public scrutiny for the norm violator would be related to an increased propensity to sanction. Based on advice from our informants, we manipulated public scrutiny using *frequency of review*. To this end, we described the restaurant as either "frequently reviewed by local media and customers (among restaurants with more reviews)" (high frequency of review), or "rarely reviewed by local media and customers (among restaurants with fewer reviews)" (low frequency of review). Also following the advice of our informants, we did not insert any reference point (such as "among the top 5% of reviewed restaurants"). Since our treatment was a statement of fact, no manipulation check was needed (Perdue & Summers, 1986).

Hypothesis 3 predicted that a higher degree of competition between the enforcer and the violator would increase the propensity to sanction. We measured competition based on two manipulated treatments: physical proximity and similarity of positioning. We manipulated *physical proximity* by describing the restaurant as either "physically very

TABLE 6
Variables, Measures, and Operationalization

Variable	Measure	Operationalization
	Sanctioning of norm violations	
Propensity to sanction	Respondent's propensity to sanction a norm violation committed by the chef in the scenario	7-point scale, where 1 is very unlikely and 7 is very likely (α=0.77)
	Reputation of norm violator	
Reputation	The chef described in the scenario is highly reputed by his or her colleagues	Experimentally manipulated; High = 1, Low = 0
	Public Scrutiny of norm violator	
Frequency of review	The restaurant described in the scenario is frequently reviewed by local media and customers	Experimentally manipulated; High = 1, Low = 0
	Competition with norm violator	
Physical proximity	The restaurant described in the scenario is physically very close to the restaurant of the respondent	Experimentally manipulated; High = 1, Low = 0
Similarity of positioning	The restaurant described in the scenario has a cuisine style and an ambience similar to the restaurant of the respondent	Experimentally manipulated; High = 1, Low = 0
	Severity of norm violation	
Recipe	Transferred knowledge is a recipe	True = 1, False = 0
Signature	Transferred knowledge is a signature recipe	True = 1, False = 0
	Control Variables	
Experience	The chef described in the scenario has 20 years of experience in the industry	Experimentally manipulated; High = 1, Low = 0
Owner	Position in the restaurant, coded as 1 if chef owner, 0 otherwise	Owner = 1, Non-owner = 0
Male	Gender	Male = 1, Female = 0
Chain	Affiliation of the restaurant with a chain	Chain = 1, Independent = 0
Tenure	Years of experience in the industry	Integer count in years
Stars	Awarded Michelin star(s)	One or more stars = 1, No stars = 0
Innovativeness	Percentage of dishes on their current menu equal to those of the menu of the same period of previous year	5-point scale, where 1 is below 25% and 5 is above 75%

close to your restaurant" (high physical proximity) or "physically very distant from your restaurant" (low physical proximity). Following recommendations from our informants, we did not insert any reference point (such as "five miles away" or "within the same block") since effective distance may be a function of geography, traffic, and so on. Since our treatment was a concrete statement of fact, no manipulation check was needed (Perdue & Summers, 1986). We manipulated *similarity of positioning* by describing the restaurant as having either a "cuisine style and ambience similar to your restaurant" (high similarity of positioning) or a "cuisine style and ambience very different from your restaurant" (low similarity of positioning). We checked the manipulation by asking respondents to evaluate, on a seven-point Likert scale, the extent to which the restaurant in the scenario was comparable to their own restaurants in terms of positioning. The manipulation was successful ($F(1, 1065)=8.43$, $p = 0.00$).

Hypothesis 4 predicted that a norm violation that was more severe would increase the propensity to sanction. According to our informants, the severity of a norm violation depends on the type of knowledge that is misused. In particular, our informants told us that inappropriate use of recipes, and particularly those of signature dishes, constitutes a more serious offense. As previously described, we distinguished between three types of knowledge that could be transferred and misused, namely

recipes, recipes of signature dishes, and cooking techniques. We then looked at the effect of the dummies *recipe* and *signature* compared to the case of *technique* to capture the effect of the severity of the violation.

We collected information to control for other characteristics of the potential norm violator (i.e., the chef described in the scenario) and the potential norm enforcer (i.e., the respondent). With respect to the potential norm violator, we controlled for experience (*experience*) by administering a treatment in the scenario: "Chef has 20 years of experience in the industry" (high experience) or "Chef has one year of experience in the industry" (low experience), with references being selected based on advice from our informants. Following Perdue and Summers (1986), we did not include any manipulation check.[7] With respect to the potential norm enforcer, we controlled for ownership (*owner*), gender (*male*), affiliation with a chain (*chain*), years of industry experience (*tenure*), reputation as measured by presence of Michelin stars (*stars*), and innovativeness as measured by the percentage of dishes on the current menu equal to those of the menu of the same period in the previous year (*innovativeness*). Descriptive statistics and correlations are shown in Table 7.

Model Specification

Our randomized experimental design ensures that our treatments are orthogonal to subject attributes; thus, we can estimate unbiased coefficients for our treated variables. In particular, we employed a specification wherein each subject was given a separate fixed effect. As a robustness test, and to allow estimation of subject-level attributes, we employed a random-effects specification. Results were consistent with those presented here. As a further robustness test, and to allow more accurate assessment of the economic importance of our effects, we used an ordered probit to investigate the effect of choice on the seven ordered levels measuring *propensity to sanction*. Results were again consistent with those presented here.

We also performed a series of robustness checks to ensure that our results were not biased by other types of shared disturbances. For example, we ran an alternative model with fixed effects for both subjects and knowledge types. We then ran a Hausman test to compare the coefficients we could estimate with these models and those we report in this article (Hausman, 1978). We confirmed the coefficients did not change significantly (Wooldridge, 2002).

Each chef answered questions about the three types of knowledge (recipes, signature dishes, and cooking techniques) following each scenario. Thus, we obtained six related responses from each chef (three knowledge types for each of the two scenarios). In order to address the inherent correlation in error terms across these six observations, we clustered standard errors by chef. Such treatment of errors is an example of Eicker–Huber–White robust treatment of errors, also known as the Huber–White sandwich estimator (Huber, 1967; White, 1980; Williams, 2000; Wooldridge, 2002). We also performed a bootstrap estimation to allow alternative structures for the variance/covariance matrix (Mooney & Duval, 1993). Results of a bootstrap estimation using 5,000 bootstrap re-samples with replacement supported the sign and significance of our results.

RESULTS FROM OUR FIELD EXPERIMENT

Our quantitative experiments tested each of our hypotheses and confirmed many of the insights gained from our qualitative study. More importantly, they provided insight into the role of strong and weak reciprocity in determining sanctioning "in the wild." Table 8 reports the results of the regression analysis used to test our four hypotheses.

The first three hypotheses informed by our qualitative study suggest that, following a rational self-interested perspective (i.e., weak reciprocity), chefs consider the costs associated with sanctioning before administering a sanction. In particular, chefs argued that these costs are affected by how other chefs will interpret a sanction, based on two factors: (a) the reputation of the violator (Hypothesis 1), and (b) the level of public scrutiny of the violator (Hypothesis 2). Chefs also considered it important to evaluate the future impact of sanctioning choices,

[7] Given our empirical strategy, the insertion of such a control variable could have been avoided, as in experiments researchers should treat only the variables of interest. The reason why we manipulated this variable is because our original idea was to aggregate reputation and experience into a single measure that could better capture the standing of the chef described in the scenario. However, we observed the results of this composite measure as being completely driven by our manipulation of reputation. As a consequence, we have chosen to present the two manipulations separately and use the manipulation for experience as a control.

TABLE 7
Descriptive Statistics and Correlations

	Variable	Mean	*SD*	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Propensity to sanction	3.21	1.79	1	7	1.0														
2	Reputation	0.50	0.50	0	1	0.0	1.0													
3	Frequency of review	0.51	0.50	0	1	0.0	0.0	1.0												
4	Geographical proximity	0.51	0.50	0	1	0.1	0.0	0.0	1.0											
5	Similarity of positioning	0.51	0.50	0	1	0.0	0.0	0.0	0.0	1.0										
6	Recipe	0.32	0.47	0	1	0.0	0.0	0.0	0.0	0.0	1.0									
7	Signature	0.34	0.47	0	1	0.0	0.0	0.0	0.0	0.0	−0.5	1.0								
8	Experience	0.50	0.50	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0							
9	Owner	0.79	0.41	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0						
10	Male	0.82	0.38	0	1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	−0.2	1.0					
11	Chain	0.06	0.24	0	1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	−0.1	0.1	1.0				
12	Tenure	26.71	9.93	4	60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.0			
13	Stars	0.19	0.39	0	1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	−0.1	1.0		
14	Innovativeness	3.32	1.18	1	5	−0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	−0.1	0.1	0.1	−0.2	0.1	1.0	
15	Propensity to transfer knowledge	4.80	1.97	1	7	−0.3	0.1	0.0	−0.1	0.0	0.0	−0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.0

based on (c) the degree of competition with the violator (Hypothesis 3).

The results of our regressions support Hypothesis 1: the propensity to sanction is negatively related to the reputation of the violator, as shown by the significant coefficient for *reputation*.[8] The coefficient also has an economically meaningful effect on behavior. The probability of observing the highest propensity to sanction (i.e., 7) decreases by 17.2% for well-reputed violators.[9]

In our qualitative study, chefs reported that the social risk of sanctioning is influenced by public scrutiny of the potential norm violator. We tested Hypothesis 2 by manipulating the *frequency of review*, but the estimated coefficient is very small and cannot be distinguished from 0. We speculate that this lack of significance is caused by the fact that we are observing two counteracting forces. Consistent with what we heard in the field, public scrutiny may help community members to understand and accept sanctioning as legitimate, thus lowering the associated social costs. However, as predicted by previous research (e.g., Coleman, 1990; Ostrom, 1990), it may also reduce the need to sanction. Why should one bother to administer a sanction if the social community is already aware of the violation? Indeed, one of the chefs in our study expressed this logic:

> A chef would not follow one of my recipes exactly and then serve it in [his] restaurant because eventually you are found out and people will say, "You know, this is crazy: you know Joe, the chef in Cambridge, is serving the same dish that he learned how to cook over at Bob the chef's, over in Boston."

We find evidence in support of Hypothesis 3, which states that chefs are more likely to sanction a violator who is more physically proximate. The

[8] This result is robust to an alternative specification in which we substituted our absolute measure of reputation with a relative measure looking at the difference between the reputation of the violator and the reputation of the enforcer. The sign and significance for coefficient estimates are consistent with the results we report in the paper. We are grateful to one of our reviewers for suggesting this additional test.

[9] In order to better assess the economic significance of our results, we ran an ordered probit regression with robust clustered standard errors and individual fixed effects. Based on the resulting estimates, we computed the predicted probability of observing each value taken by our dependent variable (from 1 to 7) when each of our (significant) independent variables move from 0 to 1, with all other variables held at their means.

TABLE 8
Explaining Propensity to Sanction: The Role of Weak versus Strong Reciprocity Mechanisms[a]

	Model 1		Model 2		Model 3	
Weak Reciprocity	**Coef.**	***SE***	**Coef.**	***SE***	**Coef.**	***SE***
Reputation of norm violator						
Reputation	−0.166***	0.060			−0.165***	0.060
Public scrutiny of norm violator						
Frequency of review	−0.007	0.057			−0.007	0.057
Competition with norm violator						
Geographical proximity	0.138**	0.064			0.138**	0.064
Similarity of positioning	0.082	0.062			0.082	0.062
Strong Reciprocity						
Severity of norm violation						
Recipe			0.225***	0.041	0.224***	0.041
Signature			0.225***	0.041	0.225***	0.041
Control Variables						
Experience	−0.058	0.060	−0.046	0.059	−0.058	0.059
Respondent fixed-effects	Included		Included		Included	
_cons	3.214***	0.069	3.084***	0.041	3.065***	0.074
N	3,036		3,036		3,036	
F	2.810		13.296		7.551	
R^2 (ω)	0.009		0.013		0.022	

[a] The table displays results of fixed-effects OLS regressions with robust clustered standard errors. We report the within-R^2 (ω) for all models. The significance levels are indicated as follows:

* $p < 0.1$
** $p < 0.05$
*** $p < 0.01$

coefficient for *physical proximity* is statistically significant ($\beta = 0.138$, $t = 2.16$, $p = 0.031$). The economic effect of proximity is meaningful as well. The probability of observing the highest propensity to sanction (i.e., 7) increases by 18.4% when violators are physically proximate. We do not estimate a statistically significant coefficient for the other attribute of competition; i.e., *similarity of positioning*. We believe that a countervailing factor may dampen the effect of this coefficient. Similar positioning implies a potential for exchanging physical materials and personnel (e.g., table supplies, staff, and urgently needed ingredients), which could increase the cost of sanctioning when and if a misuse of transferred knowledge occurs.

Results from our qualitative study also offer support to the strong-reciprocity perspective by showing that, under some conditions, chefs forego rational calculus and administer a sanction based on their emotional response to a violation. The evidence we collected points at one factor that reportedly triggers this response, namely the severity of the violation (Hypothesis 4). In support of this prediction, the coefficient for *recipe* and *signature* estimated in Table 8 are both positive and strongly significant, showing that if the inappropriately used knowledge falls under these types, an individual is more likely to sanction the norm violation, compared to the case in which the misuse involves a cooking technique. The economic effect of the severity of the violation is significant as well: the probability of observing the highest propensity to sanction (i.e., 7) increases by 30% in cases of violations involving recipes of both ordinary and signature dishes.

The Relationship Between Sanctioning and Cooperation: Implications

To this point, we have examined how characteristics of the violator and the violation stimulate different types of reciprocity. However, before they are faced with the choice to administer a sanction, actors with valuable private knowledge must decide whether to transfer knowledge to a counterpart who asks for it. For simplicity, we have ignored the actor's decision of whether or not to participate in the norm-governed exchange. Doing so would complicate our

analysis because the choice to sanction a norm violation and the choice to participate in the norm-governed exchange could be affected by some of the same characteristics we manipulated in our experiment. Nevertheless, overcoming this analytical difficulty is important because examining the relationship between propensity to sanction and propensity to participate can be used to discriminate between weak- and strong-reciprocity perspectives.

According to a weak-reciprocity perspective, the propensity to sanction and the propensity to participate should be positively related. Simple backward induction can be used to predict how a knowledge holder should act when considering the decision to sanction and the decision to cooperate jointly. Simply put, the more a knowledge holder is willing to sanction a potential norm violation, the less willing a potential norm violator should be to defect; in turn, this should reassure the knowledge holder that it is safe to transfer the knowledge requested (Sigmund, 2007). Thus, we should observe that the propensity to administer a sanction (conditional on a future violation) is *positively* related with the choice to participate in the norm-governed exchange.

With strong reciprocity, in contrast, there is no reason to hypothesize a relationship between the propensity to sanction and the propensity to participate in the norm-governed exchange. In the strong-reciprocity framework, individuals respond to norm violations in a type 1, intuitive manner: their decision is preconscious or emotional, and is not based on cost–benefit considerations. Indeed, a central element of the strong-reciprocity argument is a rejection of self-interested motivation.

Given the nature of the norms operating in our empirical context, we focus on a particular case of exchange: knowledge transfer. We measured the *propensity to transfer knowledge* as the likelihood that a respondent would transfer culinary knowledge to the chef described in the scenario. Specifically, after each of the two scenarios, we asked chefs (in Italian): "If the chef in the scenario asked you for it, how likely is it that you would provide: the recipe for a dish/the recipe for one of your signature dishes/information about a cooking technique?" As in the case of the propensity to sanction a norm violation, each respondent was asked about transferring three types of knowledge; i.e., *recipe*, *signature*, and *technique*.

Note that in order to provide empirical evidence on the relationship between the propensity to sanction and the propensity to cooperate, we needed to regress a measured (rather than manipulated) independent variable (*propensity to sanction*) on another measured dependent variable (*propensity to transfer knowledge*). By differencing across the two scenarios administered to each respondent, we account for individual differences with respect to both sanctioning and knowledge transfer, and thus accurately test this relationship. We also decrease the potential for common method bias that is inherent when measuring both variables using the same scenario.

To see how this can be the case, consider the following two equations, where *i* indicates subjects and *j* indicates scenarios:

$$Y_{i,j} = bZ_{ij} + \beta \boldsymbol{X}_{ij} + B\boldsymbol{W}_i + \delta_i + \theta_j + \varepsilon_{ij} \quad \text{Equation 1}$$

$$Z_{i,j} = \beta \boldsymbol{X}_{ij} + B\boldsymbol{W}_i + d_i + \vartheta_j + e_{ij} \quad \text{Equation 2}$$

The variable $\boldsymbol{Y}$ (*propensity to transfer knowledge*) is a function of the measured variable, $\boldsymbol{Z}$ (*propensity to sanction*), the vector of treatments, $\boldsymbol{X}$ (*reputation*, *frequency of review*, *physical proximity*, *similarity of positioning*, *experience, recipe*, and *signature*), and the vector of other independent variables, $\boldsymbol{W}$ (*owner*, *male*, *chain*, *tenure*, and *stars*). The variable $\boldsymbol{Z}$ (*propensity to sanction*) is a function of the vector of treatments, $\boldsymbol{X}$, and the vector of independent variables, $\boldsymbol{W}$. Both equations also include the potential for unknown disturbance terms for subject *i* (δ_i and d_i), scenario *j* (θ_j and ϑ_j), and observation *ij* (ε_{ij} and e_{ij}).

Including the variable $\boldsymbol{Z}$ in the main equation could bias our estimates if the disturbance terms for the subject and scenario are correlated $[\rho(\delta_i, d_i) \neq 0, \rho(\theta_j, \vartheta_j) \neq 0]$. Fortunately, these terms are removed when differencing across responses to the two scenarios. As a result, we estimate:

$$Y'_{i,j} = bZ'_{ij} + \beta \boldsymbol{X}'_{ij} + \varepsilon_{ij} \quad \text{Equation 3}$$

$$Z'_{i,j} = \beta \boldsymbol{X}'_{ij} + e_{ij} \quad \text{Equation 4}$$

Table 9 reports the results of the regression analysis we used to examine this relationship. Models 1 and 2 report the coefficient estimates for a simple OLS regression with clustered standard errors. Contrary to what was predicted by the logics of strong-reciprocity and weak reciprocity, the coefficient for the propensity to sanction in Model 2 is negatively associated with the propensity to cooperate. Because of the specification used, the estimated coefficient captures both the effect of individual differences across respondents and the effect of manipulation differences across scenarios. To explore the effect of the scenario treatments only, we

introduced fixed effects for the respondents (Model 3) in an attempt to control for any personal characteristic that might explain an individual's propensity to engage in social exchange. As a result, none of the control variables at the level of the respondent can be estimated in (and are thus omitted from) this last model. The coefficient continues to be significant at the $p < 0.001$ level. The probability of observing the highest propensity to transfer knowledge (i.e., 7) decreased by 18.2% when the propensity to sanction was above its median level.[10]

Overall, the results from this analysis seem to suggest an unexpected relationship between propensity to sanction and propensity to cooperate.[11] They run contrary to the positive relationship predicted by a weak-reciprocity argument,[12] but they also run against the strong- reciprocity theory that predicts no relationship at all. In order to make sense of this unexpected finding, we returned to the qualitative evidence collected during our field study and found that, indeed, some of our informants shared a possible explanation for this surprising finding.

Some of our informants reported avoiding sharing knowledge when they sensed it could lead to a norm violation that they would then feel obliged to sanction. For example, one chef brought up a call from a colleague at a larger restaurant. The chef making the request was looking for help in setting up a new cooking process. Fearing the need to sanction the colleague should the knowledge be misused, the chef deflected the request to someone else:

> They said, "We're really interested in sous-vide." And I said, "That's great." And they said, "Well, I wonder if you could help us with it." And I said, "Well, you should call [a professional instructor]. [He's] the man. He'll teach you everything you need to know."

In the case above, the chef avoided sharing this knowledge because of an expectation that there would by a need to sanction a violation, if one occurred. A clear alternative for him would have been to simply decline to sanction the norm violation; however, because he seemed believe that, *ex post*, he would feel *obliged* to sanction any noncompliance, he opted *ex ante* to avoid the risk.

Synthesizing our Full Results

Our experimental findings largely confirm the generality of the reports we received in our qualitative interviews. But what do they mean for theories of sanctioning, and, more specifically, for the debate on weak versus strong reciprocity? Are chefs impervious to costs and benefits, or do they actually base their sanctioning choices on rational calculus and strategic considerations?

Consistent with weak-reciprocity theory, we find that chefs consider sanctioning costs when deciding whether to sanction. After a violation has occurred, they report being less likely to sanction when they expect it to be more costly to do so. In particular, they will consider how other chefs are going to interpret the sanction and administer it only in those cases in which they can expect this interpretation to be in their favor; i.e., if peers will understand that social order is being reestablished by sanctioning a previously committed violation. However, we also find that strong-reciprocity theory holds predictive power. Consistent with

[10] In this case, we ran an ordered probit regression with robust clustered standard errors and individual fixed effects. Based on the resulting estimates, we then computed the predicted probability of observing each value taken by our dependent variable (from 1 to 7) when our independent variable (dichotomized for values above and below the median) moved from 0 to 1, with all other variables held at their means.

[11] Note that the relationship above implies the existence of a structural model, in which our independent variables affect our mediating variable (*propensity to sanction*), which in turn influences our dependent variable (*propensity to transfer knowledge*). We hence conducted a series of analyses aimed at testing the significance of an indirect effect of social and individual factors on the likelihood to transfer knowledge, through the propensity to sanction norm violations. Results consistently confirm the presence of a significant mediation effect, independent of whether we assess it using the traditional stepwise approach by Baron and Kenny (1986), the Sobel (1982) test, or the recently recommended bootstrap approach (Zhao, Lynch, & Chen, 2010).

[12] As a further robustness test of the weak-reciprocity logic, we empirically examined the relationship between propensity to sanction and the expectation of norm compliance. A weak-reciprocity logic would indeed predict that one's propensity to sanction should affect the behavior of potential norm violators, by inducing them to avoid defection. In other words, one should observe a higher adherence to norms for cases in which norm enforcers are more likely to sanction or in those conditions where sanctions are more likely. Results from our analysis suggest that there is no relationship between the propensity to sanction and expectations of norm conformance ($\beta = -0.021$, $t = -0.77$, $p = 0.444$).

TABLE 9
Explaining the Effect on Cooperation: The Relationship between Propensity to Sanction and Propensity to Transfer Knowledge[a]

	Model 1		Model 2		Model 3	
	Coef.	***SE***	**Coef.**	***SE***	**Coef.**	***SE***
Propensity to sanction			−0.273***	0.026	−0.165***	0.029
Control Variables						
Reputation	0.190**	0.085	0.169**	0.081	0.317***	0.077
Frequency of review	−0.006	0.083	0.012	0.079	−0.009	0.073
Physical proximity	−0.398***	0.084	−0.329***	0.080	−0.432***	0.076
Similarity of positioning	0.069	0.083	0.066	0.079	−0.179**	0.075
Recipe	−0.474***	0.066	−0.417***	0.065	−0.446***	0.051
Signature	−1.298***	0.080	−1.236***	0.078	−1.260***	0.063
Experience	−0.015	0.087	0.026	0.082	0.059	0.076
Owner	−0.111	0.122	−0.090	0.115	*Omitted*	
Male	0.108	0.132	0.093	0.123	*Omitted*	
Chain	0.016	0.209	−0.013	0.200	*Omitted*	
Tenure	−0.002	0.005	−0.003	0.005	*Omitted*	
Stars	0.298**	0.123	0.338***	0.119	*Omitted*	
Innovativeness	0.172***	0.041	0.125***	0.040	*Omitted*	
Respondent fixed-effects	Not Included		Not Included		Included	
_cons	4.887***	0.270	5.845***	0.263	6.024***	0.137
N	3,036		3,036		3,036	
F	25.655***		34.099***		65.155***	
R^2 (ω)	0.107		0.167		0.206	

[a] The table displays the results of OLS regression with robust clustered standard errors (models 1 and 2), as well as fixed effects at the level of the respondent (model 3). We report the within-R^2 (ω) for all models. The significance levels are indicated as follows:
* $p < 0.1$
** $p < 0.05$
*** $p < 0.01$

a retributive logic, chefs have a greater tendency to sanction more severe violations and violations committed by competing establishments. More importantly, chefs' qualitative reports and supporting quantitative evidence suggest that chefs themselves sometimes believe they will feel obliged to sanction. Were sanctions purely discretionary, chefs could simply avoid their costs *ex post* by deciding not to sanction. Instead, chefs choose to avoid sanctioning costs by avoiding an exchange that could lead to a norm violation. They would rather forgo the value of exchange than risk a future obligation to sanction.

In sum, our results show that chefs seem to experience an obligation to sanction significant norm violations, in keeping with strong-reciprocity theories, but are also aware of and calculating about these tendencies: *ex post*, they temper their behavior when sanctioning may incur a social penalty; *ex ante*, they avoid conditions that might demand a costly sanction in the first place. Thus, as predicted by weak-reciprocity theories, future concerns moderate current behaviors, but do so in an unpredicted way.

Limitations

Our findings include several limitations. First, we measure intended action rather than real action. Scholars have shown that people's actual behavior differs from their *ex ante* anticipation of how they will behave (Bazerman & Tenbrunsel, 2011). This limitation, which is intrinsic to the use of a scenario-based experiment, hampers the generalizability of our findings. Nevertheless, we believe this limitation is mitigated by the fact that the results of our quantitative analysis are consistent with the empirical evidence gathered during the qualitative phase of our work.

Second, our models explaining the propensity to sanction have limited explanatory power, as shown by the (within) R^2 of our full model being equal to 0.022 (Table 8, Model 3). This does not suggest bias in our estimated coefficients, since our randomized

design guards against this, but it does suggest the existence of missing variables and the need for further research. While small, the predictive power of our models is in line with previous scenario-based experiments (e.g., Schminke, Ambrose, & Noel, 1997). This is probably due to the fact that the analysis is limited to a specific set of factors, and the scenario treatments may not be as salient as those administered in a controlled experimental setting. In addition, the need to include fixed effects to remove model differences limits predictive power. To assess the extent to which our focus on within-subject changes limits our predictive ability, we ran a basic variance decomposition of our measure of *propensity to sanction*. Results from this analysis suggest that about half of the variance of our dependent variable is actually explained by individual characteristics.[13] Such individual characteristics seem particularly important when testing the predictions of strong-reciprocity theories. We will come back to this issue when discussing options for future research.

DISCUSSION AND CONCLUSIONS

Why do we sanction norm violations? Despite near universal agreement on the role of sanctions for holding norms of cooperation in place, scholars hotly dispute whether individuals in the real world sanction because of a rational calculus or because of retributive instincts. This paper reports a field study that examines sanctioning behavior. Our goal is to extend theories of sanctioning by evaluating the conditions under which individuals are more likely to sanction a norm violation.

Our study contributes to the existing literature in several ways. First, we contribute to the debate on "strong-reciprocity" versus "weak-reciprocity" explanations for sanctioning by showing that the two logics of sanctioning each hold predictive power. Chefs seem to experience the obligation to sanction significant norm violations that are inherent in strong-reciprocity theories, but they are aware and calculating with respect to these tendencies. After a norm violation occurs, they temper their behavior when sanctioning may incur a social penalty. Before a norm violation occurs, they avoid exchange in conditions where they might feel obliged to sanction. Thus, we find evidence for the relevance of strong reciprocity *and* weak reciprocity. Consistent with the strong-reciprocity perspective, sanctioning appears to be an obligation for some norm violations, particularly for the more severe ones. However, as predicted by the weak-reciprocity perspective, concerns about the future moderate current behavior, albeit in a surprising way: They cause individuals to avoid situations in which they might feel obliged to sanction.

Second, our research suggests that a central difficulty communities must overcome lies in determining which sanctions are legitimate. Legitimate sanctions punish an actual norm violation and are appropriate to the violation, while illegitimate sanctions are excessive or unwarranted. They may not even be sanctions, but rather norm violations masquerading as sanctions. We suggest that, prior to administering a sanction, individuals will consider how other community members will interpret their actions. As a result, they will sanction a norm violation if and only if they expect their peers to reconstruct the sequence of events in a way that is favorable to them; i.e., if peers will understand that a sanctioning action was made in response to a violation committed previously, and is therefore an effort to restore social order. In this respect, our study extends previous research examining the "legitimacy loss" that may derive from violating a norm (Elsbach, 1994; Jonsson, Greve, & Fujiwara-Greve, 2009; Sullivan, Haunschild, & Page, 2007), by showing that a loss of legitimacy may also, paradoxically, derive from sanctioning a norm violation.

The issue of legitimacy loss associated with sanctioning is rooted in one feature of our empirical context—that sanctions entail the risk of being misinterpreted as norm violations themselves. This feature is not peculiar to gourmet cuisine; for instance, consider studies of the lobster gangs of Maine, wherein local norms prevented egregious overfishing (Acheson, 1988). In Maine Lobster Fisheries, violators of traditional fishing regions or catch limits are often punished by reciprocal norm violations. In this example, lobstermen will sanction by fishing in a norm violator's home region, or steal lobsters from traps, or cut the floats off lobsterpots. Any of these actions would be seen as a norm violation were they not performed *in response to* a prior violation. Similarly, studies of stand-up comedians show that "intellectual property norms" prevent misappropriation of jokes (Oliar & Sprigman, 2008). If a comedian violates one such norm, by for instance stealing the joke of a colleague, it is possible that other comedians will

[13] We are grateful to one of our reviewers for suggesting this additional test.

retaliate by using physical violence, a reaction that would appear unjustified—even morally bankrupt—if not motivated by an earlier norm violation.

Third, our research contributes to a recent stream of studies examining the operation of social norms in contexts in which intellectual property rights are not available. Previous studies have argued that social norms may substitute missing legal protection by dictating appropriate uses of transferred knowledge (Fauchart & von Hippel, 2008; Loshin, 2008; Oliar & Sprigman, 2008). Recent studies have further shown that, in these contexts, people transfer private knowledge based on the expectation that a receiver will abide by social norms (Di Stefano, King, & Verona, 2014). However, previous research has not fully examined the mechanisms holding these "norm-based intellectual property systems" in place. Some authors have argued that the wronged party does not need to sanction norm violations because third parties, such as customers and reviewers (Fauchart & von Hippel, 2008) or other colleagues (Loshin, 2008), will administer punishments. Still others have reported anecdotal evidence on the retaliatory strategies a harmed party may employ, such as back-room conversations and refusing to work together (Oliar & Sprigman, 2008). We contribute to this literature by examining the antecedents and consequences of sanctioning.

From an empirical standpoint, our study adds to the literature on sanctioning by combining a field study incorporating an inductive, qualitative analysis with a field experiment examining the determinants and consequences of sanctioning. Sanctioning has been studied most in laboratory experiments (Fehr & Gintis, 2007; Sigmund, 2007), but surprisingly little is known about the determinants of sanctioning in real-world settings. As a result, scholars have called for an examination of sanctioning behavior in the field, where aspects of the local context can be considered (Gurven & Winking, 2008). We answered this call by conducting our analysis on the actual participants in a norm-regulated setting, and we manipulate situational factors that are specific to the empirical context and to the set of norms under examination.

Despite its real-world setting, our results may have important boundary conditions. The social component of norms and sanctions may make the issue of social legitimacy more salient for status-based industries, such as fine fashion, academia, performing arts, as well as for some other professional elites, such as lawyers, doctors, investment officers, and so on (Abbott, 1983; Abolafia, 2001). In these contexts, the reputation of the player is a valuable asset, and putting it at stake may be harmful to their industry peers. As a consequence, it is reasonable to expect the social component of sanctioning to be more relevant in these settings.

In future research, we plan further explorations of sanctioning in the field. Our findings about the effect of reputation, public scrutiny, severity, and competition on the propensity to sanction suggest that contextual factors play an important role. It could be insightful to explore, for instance, the extent to which different network structures (Mani & Moody, 2014) increase the propensity to sanction. Along these lines, agglomeration may also play a role to the extent that geographical concentration may foster a dense network of relationships, thereby facilitating social control (Coleman, 1988, 1990) and encouraging cooperation (Allcott, Karlan, Möbius, Rosenblat, & Szeidl, 2007).

Further research could also explore how individual attributes influence sanctioning choices. As discussed earlier, a decomposition analysis of our data shows that half of the variance in sanctioning behavior is actually explained by characteristics that are invariant at the individual level. This suggests the need for additional research aimed at unveiling the identity of individuals who are more willing to police norm violations. This line of research, we speculate, could prove particularly interesting in light of studies in the strong-reciprocity tradition, according to which certain people assign themselves the role of enforcer.

In total, our results suggest that theories of strong and weak reciprocity each have predictive power for sanctioning behavior "in the wild." Individuals follow retributive instincts, but they also engage in cost–benefit considerations. Indeed, our results suggest that the two logics of sanctioning jointly influence participation in social exchange. *Ex post*, individuals temper their sanctioning behavior when sanctioning may incur a social penalty. *Ex ante*, however, they avoid conditions where they would feel obliged to sanction should a violation occur.

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