

Why Did They Claim Too Much? The Role of Causal Attributions in Explaining Level of Cooperation in Commons and Anticommons Dilemmas

ALAIN VAN HIEL¹ AND

SVEN VANNESTE

*Department of Developmental, Personality,
and Social Psychology
Ghent University
Ghent, Belgium*

DAVID DE CREMER

*Department of Economic and
Social Psychology
Tilburg University
Tilburg, The Netherlands*

The present study ($N = 200$) investigated participants' attributions for explaining the behavior of noncooperative and cooperative targets in a commons and anticommons dilemma. The attribution dimensions of concern for others, fear, (low levels of) greed, and efficiency were highly related and were interpreted to reflect prosocial orientation. Cooperative targets were judged as more prosocial, but these differences were more pronounced in the commons than in the anticommons dilemma. Cross-over interaction effects were obtained for ignorance and fear, revealing higher attribution scores for the noncooperative target in the commons dilemma and the cooperative target in the anticommons dilemma. It is argued that commons and anticommons dilemmas constitute different frames of reference for judging cooperative behavior.

The pertinent danger for depletion of common resources (e.g., danger of overfishing, air pollution) is a well investigated topic in the psychological literature (for an overview, see Dawes, 1980; Komorita & Parks, 1995; Weber, Kopelman, & Messick, 2004). People's own interests are enhanced by taking too much from a scarce resource, but at the same time, the community as a whole will be hurt. This dilemma type, denoted as the *commons dilemma* (Hardin, 1968), is thus characterized by a direct conflict between individual gains and collective interests.

In the present studies, we focus on the commons and its mirror image: the anticommons dilemma. Over the last decade, the relationship between the dilemma types has increasingly become an issue in the economic literature (e.g., Buchanan & Yoon, 2000; Heller, 1998). Although research has addressed the role of various psychological variables in commons dilemmas (for an overview, see Weber et al., 2004), the role of psychological processes

¹Correspondence concerning this article should be addressed to Alain Van Hiel, Department of Developmental, Personality, and Social Psychology, H. Dunantlaan 2, 9000 Gent, Belgium. E-mail: Alain.VanHiel@UGent.be

that come into play in anticommons dilemma has not yet been studied (see Vanneste, Van Hiel, Parisi, & Depoorter, 2006).

In the present study, we focus on the role of causal attributions in typical commons and anticommons dilemmas. More precisely, we compare participants' causal attributions for the other party's cooperative and noncooperative behavior in the commons and the anticommons dilemma. In examining this, validated scenarios (Vanneste et al., 2006) will be used, and we will administer various possible attribution dimensions—ignorance, concern for others, fear, greed, efficiency, and fairness—which have been reported to have pervasive effects in social dilemma contexts (Van Lange, Liebrand, & Kuhlman, 1990; Wilke, 1991).

The Tragedy of the Commons and Its Mirror Image

Since its publication in *Science* over 30 years ago, Garrett Hardin's (1968) "Tragedy of the Commons" has provided insight into topics as diverse as overpopulation, air pollution, and species extinction. According to Hardin, these situations involve people's overutilization of shared resources, which is presumably caused by their perception that there is little incentive to conserve the commons. For example, fishermen readily experience the incentive to maximize their current harvest, but they seem to ignore the fact that the fish resource can only replenish itself to a small extent. As a result, fishermen harvest at a higher rate than the fish reproduce and, in the long run, the resource will be exhausted.

Recently, Heller (1998; Heller & Eisenberg, 1998) articulated the mirror image of the tragedy of the commons—the *tragedy of the anticommons*—in which property rights for privately held resources lead to underutilization of the resource. In particular, because of multiple ownership, individuals hold rights to exclude each other from a scarce resource, and no one exercises an effective privilege of use.

The presence of empty stores in Moscow after the fall of communism, described vividly by Heller (1998), represents one of the clearest examples of the detrimental effects of the anticommons dilemma. One hope that lived among the Russians was that free-market trade would fill the stores that socialist rule had left empty for such a long time. Yet, after several years of reform, many privatized storefronts remained empty, while flimsy metal kiosks, stocked full of goods, mushroomed up on the streets. Why did this happen? It was revealed that it was difficult or even impossible for a startup retailer to negotiate successfully for the use of store space because several different agencies and private parties had rights over the use of the store space. So, even though all of the people with ownership rights were losing money with

the empty stores and even though stores were in great demand, their competing interests got in the way of the effective utilization of space. Therefore, the anticommons metaphor is useful in understanding how and why potential economic value may disappear “into the ‘black hole’ of resource underutilization” (Buchanan & Yoon, 2000, p. 2). Further examples associated with anticommons theory are land-use planning (Morris & Meiners, 2000), the market for human tissue (Mahoney, 2000), global environmental management (Rose, 1999), and computerized databases (Dreyfuss, 2000).

When looking at the legal and economic consequences of these two dilemma types, it has been argued that the anticommons should be considered a new case in social dilemma research. According to the traditional conception of property, owners enjoy a complementary bundle of rights over their property, including, among other things, the right to use the property and the right to exclude others from it. Commons and anticommons dilemmas can be conceived as symmetric deviations from the standard bundle of rights (see Buchanan & Yoon, 2000; Heller, 1998; Heller & Eisenberg, 1998; Parisi, Schulz, & Depoorter, 2005). In commons dilemmas, the right to use stretches beyond the effective right (or power) to exclude others. Conversely, in an anticommons property regime, the co-owners’ right of use is crowded out by an overshadowing right of exclusion held by other co-owners.

Although the economic literature has argued convincingly that the commons and anticommons dilemmas are two structurally different property regimes because of their specific departures of standard property rights, we do not know much about the psychological differences between these two situations. Given the lack of attention for the anticommons dilemma in psychological literature, the relevant question here is Why do people hold onto exclusive access to resources, even if this means underutilizing them?

Individual Versus Collective Rationality

Why do these tragedies arise? According to the perspective of individual rationality, it is assumed that people are mainly interested in pursuing their own self-interests and that, consequently, cooperation in social groups is difficult to achieve (Luce & Raiffa, 1957; Stouten, 2005). Conversely, the perspective of collective rationality prescribes cooperation because each person realizes that one benefits more from collective cooperation than from the collective defecting choice. The result is a conflict between the individual and collective strategy (Wilke, 1991).

Within the anticommons, as well in the commons dilemma, the short-term choice is to maximize the outcome for oneself over the choice of cooperation. However, in the long run, the individualistic choice is worse for all participants. That is, noncooperation leads to overuse and collapse in a commons

dilemma; whereas, by contrast, the anticommons problem will lead to underuse and nonuse of the resource. The example of the Moscow stores demonstrates these features for the anticommons dilemma: Co-owners who exclude each other from benefiting a common resource cause a situation in which the building is left empty and not utilized. Thus, it seems as if co-owners prefer that a privately held resource molder, rather than offer it for common consumption.

Should the anticommons dilemma be considered a new dilemma or can we view this type of dilemma as an alternate expression of the same underlying conflict between private and collective interests as in the commons dilemma? Although the rationality conflict is similar for the commons and the anticommons, Vanneste et al. (2006) showed that people's reactions to the anticommons dilemma are even more detrimental than in the commons dilemma. Using an interactive board game, Vanneste et al. (2006, Study 1) showed that anticommons situations generated greater opportunistic behavior than did an equivalent commons dilemma.

These effects were replicated in a study in which a scenario methodology was used (Vanneste et al., 2006, Study 2). In their commons condition, the choice options were operationalized as a payoff scheme framed in terms of the probability that the common resource would regenerate, given the choice of a particular outcome described as a monetary benefit. In the anticommons condition, each monetary benefit was linked with the probability that a buyer would agree with the selling price of the common resource. The results of this study revealed that participants in the commons dilemma asked for more than the amount considered to lead to a 100% certainty that the resource would replenish itself. Therefore, the data were consistent with the hypothesis that the commons dilemma leads to overuse. Moreover, in the anticommons condition, the price that participants asked, relative to the commons, deviated even further from the selling price needed to have a 100% certainty that the buyer would agree. These findings confirmed the hypothesis that the anticommons dilemma leads to underuse. Most important, however, was the result that the selling prices in the anticommons significantly surpassed the monetary benefits claimed in the commons dilemma. To understand why people's choices may differ as a function of dilemma type (commons vs. anticommons), one important question to address is how people interpret the situation and attribute cooperation.

Causal Attributions in Dilemmas

To date, only a few studies have investigated the role of causal attributions in social dilemmas. The question as to whether people's attributions are a function of dilemma type has not yet been explored (for a notable excep-

tion, see Stouten, 2005). More precisely, comparing the two dilemma types puts forward the question as to whether cooperativeness is attributed to the same reasons in the commons and anticommmons dilemmas.

An interesting insight in the role of attributions has been proposed by Van Lange et al. (1990), who compared causal attributions made by cooperators and defectors for a cooperative and a noncooperative target in the N-Person Prisoner's dilemma. That is, participants were asked to make causal interpretations of cooperative and noncooperative choices performed by two imaginary targets. Four dimensions of attributions were investigated: ignorance, concern for others, fear, and greed. Van Lange et al. reported significant differences for each of these attribution dimensions, and Hine and Gifford (1996) replicated the results in a commons dilemma.

Ignorance is a blend of potency and intelligence items that pertains to the perceived rationality and intelligence of others' choices. Van Lange et al. (1990) and Hine and Gifford (1996) reported that noncooperation was attributed more to ignorance than cooperation. *Concern for others* refers to concern about others' interests (e.g., by giving other people opportunities), as well as a feeling of responsibility for other persons. As can be expected, it was revealed that cooperative targets were perceived to be more concerned for others than were noncooperative targets. Finally, it was also revealed that cooperative targets were judged to be less fearful and less greedy. The attribution dimension of *fear* refers to feelings of insecurity about oneself and uncertainty about others' intentions. The dimension of *greed* indicates that one always wants to earn as much as possible.

Wilke's (1991) greed, efficiency, and fairness (GEF) hypothesis aims at explaining cooperation in social dilemmas. Although his theory does not focus primarily on the role of attributions, it can have important consequences for people's attributions for cooperative and defective behavior in resource dilemmas. Wilke showed that in social dilemmas, self-interest or greed is a strong and dominant motive that is constrained by concerns for efficiency and fairness. *Greed* is defined as the desire to obtain the highest payoffs or to harvest as many outcomes as possible. *Efficiency* is the desire to use the resource efficiently and intelligently. Efficient resource utilization in a multitrial dilemma implies that the entire group's harvests are at the level of the replenishment rate, thereby keeping the pool size constant during repeated harvests. Greed can also be reduced as a result of fairness considerations. *Fairness* is characterized by the desire to promote a fair share, referring to equal outcomes for all group members. Hence, even though a group manages to harvest to the same extent as the replenishing rate, people may become dissatisfied if harvest sizes within the group are unbalanced.

In sum, according to the GEF hypothesis, people refrain from excessive harvests because of efficiency and fairness considerations. Although Wilke's

(1991; see also Eek & Biel, 2003; Messick et al., 1983) GEF hypothesis has been tested only on actors' cooperativeness, we think that these dimensions also hold promise to capture judgments of cooperativeness of other people. Therefore, the GEF motives were included in the present study as attribution dimensions.

The Present Study

Notwithstanding the differential legal and economic implications of the commons and anticommons property regime, it should be noted that previous research neglected to relate these differences to psychological variables. Indeed, variables other than economic factors (e.g., different behavioral attitudes toward property, other psychological variables) may shape people's reactions to these dilemmas. In the present study, we used commons and anticommons scenarios (see Vanneste et al., 2006) that combine a number of "typical ingredients" that may be present in the real world. The main focus here is to investigate whether these typical dilemma situations generate different responses, rather than to precisely isolate the components that might underlie these eventual differences. In the present study, we focus on the applied issue as to whether these dilemmas are effectively construed in a different way.

Here, we aim to clarify two important issues. First, we investigated to what extent we could substantiate findings related to attributions for cooperativeness reported in the limited number of previous studies. Second, and more importantly, we examined the use of these attributions within both the commons and the anticommons dilemma.

With respect to the first issue, we investigated attributions of cooperative and noncooperative behavior. Based on Van Lange et al. (1990) and Wilke (1991), we expected participants to attribute higher levels of ignorance, fear, and greed to noncooperative targets than to cooperative targets. We also expected lower levels of attributed concern for others, efficiency, and fairness to noncooperative targets than to cooperative targets.

Attributions certainly represent one interesting avenue for probing into the psychology of these dilemma types. How people interpret cooperative and noncooperative behavior of targets in each of these dilemmas might be indicative of how these dilemmas are construed. If, for example, people attribute greed from noncooperative behavior internally, then one can infer that the situation in itself does not call for greed. Indeed, a well known theorem in psychology is that people often use distinctive situational and dispositional cues as attributions for a target's behavior, and there is some opposition between the use of these two types of attributions (e.g., Ross, 1977).

Hence, the attribution of a particular trait to actors in a certain situation is indicative of how this situation is interpreted and construed. We are arguing here that when behavior is internally attributed to the actor (e.g., to greed), this implies that the situation by itself does not call for that particular attribution (i.e., the situation does not call for greed). This indirect method of assessing situations is preferred because asking individuals directly to rate the extent to which situations elicit certain behaviors has been criticized (Funder, 1982). It is easier and more natural for a perceiver to ascribe behavior to personality traits than to infer characteristics of a situation from this very same behavior. In addition, there exists no generally accepted tool for the assessment of the psychological properties of situations (see Funder & Colvin, 1991).

With respect to the second issue, then, an important question is whether these attributions are made to an equal extent in the commons and the anticommons dilemmas, or whether there are differential effects for these attribution dimensions. As mentioned previously, Vanneste et al. (2006) showed that people ask higher prices in the anticommons dilemma than the monetary amount they would take from an equivalent commons dilemma. In other words, noncooperation is not uncommon in the context presented by the anticommons dilemma, whereas this behavior is much more distinctive in the commons dilemma. Therefore, some marked differences between attributions for cooperativeness in the commons and anticommons dilemma can be expected.

Finally, in order to assess the generalizability of these possible differential attributions, half of the participants were administered a scenario featuring a timber company, and the other half learned about an oil company. Indeed, the salience of the negative consequences of noncooperative behavior in the anticommons dilemma may vary in the real world as well. In the present context, it seems reasonable to expect that it is easier to portray the underuse of timber as problematic (i.e., the timber might rot or burn up and thus be lost) than it is to think spontaneously of the negative consequences of the underuse of an oil well.

Method

Participants

A total of 200 undergraduate students (68 male, 132 female) who were enrolled in an introductory social psychology course at Ghent University took part in the present experiment. Participants' mean age was 19.5 years ($SD = 1.8$).

Design

The present study employed a $2 \times 2 \times 2$ factorial design. The between-subjects variables were dilemma (commons vs. anticommons), target (cooperative vs. noncooperative), and scenario (oil company vs. timber company).

The various attribution dimensions were the dependent variables. All participants rated the other party's behavior on the dimensions of ignorance, concern for others, fear, greed, efficiency, and fairness.

Procedure

The study was part of a classroom exercise. Participants first read the scenario. Half of the sample learned the bid of a noncooperative partner, whereas the other half of the sample was presented the bid of a cooperative partner. Participants wrote down the possible causes of the target's behavior in their own words, and then they completed the attribution dimensions.

The commons and anticommons dilemma tasks were adopted from Vanste et al. (2006). The description of the procedure is based on the timber company scenario. Besides some relevant changes, the oil company scenario was completely analogous to the timber company scenario, which will be described as follows.

Participants first read the scenario and subsequently made a bid. Participants confronted the following situation: "You are co-owner of a forest. In addition to your own timber company, four other co-owning companies operate in the same region." Participants further read a text dependent on the experimental condition. In the anticommons condition, the scenario described a situation in which the danger of underuse was mentioned; whereas in the commons condition, the pertinent danger of overuse was mentioned.

In the anticommons condition, it was thus asserted the following:

At this very moment, Co-Owner B wants to cut part of the forest, but the four other companies (including yourself) have to grant their permission. You should know that the amount of forest gained by B cannot be cut by you in a later phase. You should also know that there is some regeneration because the trees in the forest grow each year and, as a result, the forest can regenerate itself to some extent. Of course, if every year the forest is used to a substantial degree, it is obvious that the forest will eventually disappear.

Co-Owner B wants to compensate you financially for the part of the forest (s)he wants to cut. You do not know the exact profit

gained by Co-Owner B in this case. However, it is certain that Co-Owner B will try to minimize his/her risks by giving a maximum amount of money. In other words, when the selling price rises, the chances diminish that B will buy part of the forest. The total amount of money you can ask B to pay ranges from 0 € to 60000 €.²

If all companies restrict their asking price to a maximum of 10000 €, then it is 100% certain that B will buy the forest. One obvious danger is that the companies ask too much money for their property, making it very likely that B will not buy part of the forest, leaving the other companies (A, C, D, and E) “out in the cold.” Thus, it may be to the four companies’ collective advantage to make smaller bids. However, another danger is that a company will not do as well because it asks less money than the other three companies. Thus, it may be to each company’s individual advantage to make larger bids. It is possible that B will buy a part of the forest if, for example, two companies ask large amounts of money and the other company asks a small selling price.

Finally, participants made a bid and marked their choices on the following payoff scheme containing (see Table 1), as typical ingredients of an anticommons situation, an inversely related asking price and an increasing risk of underuse (reflected in the likelihood that the purchaser declines the deal). In the commons condition, the following was asserted:

Each year you have to make a bid stipulating how many hectares of forest you want to cut. You do not know how many hectares the other companies plan to cut. There is some regeneration of the forest because new trees grow each year and, hence, the forest can regenerate itself to some extent. The forest area you can cut will be expressed as an equivalent amount of money ranging between 0 € and 60000 €.

If all companies restrict their harvests to a maximum of 10000 €, then it is 100% certain that the forest regenerates itself completely. One obvious danger is that the forest eventually will be cut above the sustainable yield, leaving all five companies “out in the cold.” Thus, it may be to the five companies’ collective advantage to limit their harvests. However, another potential danger is that a company does not want to gain less than the

²At the time the study was conducted (October 2004), 1 euro (€) had a value of \$1.30 US.

Table 1

Payoff Matrix: Anticommons Dilemma

I ask a value of . . . €	Probability that Co-Owner B wants to buy part of the forest
0	100%
5,000	100%
10,000	100%
15,000	90%
20,000	80%
25,000	70%
30,000	60%
35,000	50%
40,000	40%
45,000	30%
50,000	20%
55,000	10%
60,000	0%

other four companies. Thus, it may be to each company's individual advantage to make larger bids. However, the forest may also be preserved if, for example, two companies make large bids and two companies make small bids.

Finally, participants completed a payoff scheme that was completely analogous to the anticommons dilemma, with the exception that the scheme had other labels (see Table 2). A typical ingredient of a commons dilemma is that a co-owner "takes" some value of the property (see Van Dijk & Wilke, 2000), which is inversely related to the risk of overuse (reflected in a poor likelihood that the common property remains intact).

Next, participants were given the bid of a noncooperative or cooperative co-owner. This information was communicated by giving participants an identical payoff scheme that indicated a bid of 45000 € (noncooperative co-owner) or 10000 € (cooperative co-owner). Finally, participants completed the attribution questionnaire.

Table 2

Payoff Matrix: Commons Dilemma

I take a value of . . . €	Probability that the forest regenerates itself
0	100%
5,000	100%
10,000	100%
15,000	90%
20,000	80%
25,000	70%
30,000	60%
35,000	50%
40,000	40%
45,000	30%
50,000	20%
55,000	10%
60,000	0%

Causal Attributions for Cooperative and Noncooperative Behavior

The attribution task was based on Van Lange et al. (1990). Participants were asked to reflect on the possible causes of the behavior of the co-owner. They first wrote down these possible causes in their own words (these transcriptions were not analyzed further).

Once the explanatory part had been written, participants completed a set of 46 items. Ratings were made on a 5-point scale, ranging from 1 (*disagree*) to 5 (*agree*). Our questionnaire contained 27 items used by Van Lange et al. (1990). Of these 27 items, 6 measured ignorance, 5 measured concern for others, 9 measured fear, and 7 measured greed. In addition to these 27 items, 19 other items were administered. To examine attributions associated with fear we used 5 items, keeping in mind the NEO-PI-R (Costa & McCrae, 1992) items that measure this facet scale as part of the five-factor model. Based on Liebrand, Jansen, Rijken, and Suhre (1986), 5 fairness items were adapted. Further, we assessed 2 new items to measure concern for others and 7 items to measure efficiency.

Results

Own Choice Behavior

First, we examined the effects of dilemma (commons vs. anticommons), scenario (oil company vs. timber company), and target (cooperative vs. noncooperative) on participants' own bids in a $2 \times 2 \times 2$ ANOVA. A significant effect for dilemma was obtained, $F(1, 192) = 74.90$, $p < .001$, $\eta^2 = .28$, indicating that participants asked for more money in the anticommons dilemma ($M = 33950$ €, $SD = 8827$) than in the commons dilemma ($M = 22222$ €, $SD = 10112$). This result corroborates Vanneste et al. (2006). All other effects were nonsignificant ($F_s < 0.42$, $\eta^2_s < .002$).

Causal Attributions: Internal Consistencies and Interrelationships

In order to increase the homogeneity of the various scales used in the present study, items that lowered the scale's internal consistency were dropped. As can be seen in Table 3, internal consistencies of the scales were generally sufficient.

Table 4 reports the correlations among the various attribution dimensions. Concern for others, efficiency, and fairness were highly and positively related; and each of these scales showed a strong negative correlation with greed. Therefore, we constructed one scale that we labeled (after recoding the greed items) *prosocial orientation* (Cronbach's $\alpha = .92$; 28 items; items that lowered α were deleted). Ignorance and fear proved to be more distinctive and were only modestly related to the other scales.

Effects of Dilemma Type and Target Cooperativeness on Causal Attributions

Next, we conducted a 2 (Dilemma: commons vs. anticommons) \times 2 (Target: cooperative vs. noncooperative) \times 2 (Scenario: oil company vs. timber company) ANOVA for each of the three dependent variables.³ In accordance with our expectations, noncooperative targets were attributed less prosocial orientation ($M = 2.51$, $SD = 0.45$) than were cooperative targets ($M = 3.24$, $SD = 0.48$), $F(1, 192) = 151.22$, $p < .001$, $\eta^2 = .44$. However, noncooperative targets were attributed comparable levels of

³The effect of scenario turned out to be nonsignificant in the three analyses, $F(1, 192) < 3.46$, ns , with the exception of a significant interaction effect with cooperation for prosocial orientation, $F(1, 192) = 4.97$, $p < .05$, $\eta^2 = .03$, indicating that the effect of cooperativeness was especially pronounced in the timber company scenario.

Table 3
Internal Consistencies and Item-Total Correlations for Attribution Scales

Attribution scale	Item-total correlation	Cronbach's α
Ignorance		.67
Because he/she		
... did not think about the choices of the other owners.	.34	
... does not know better.	.48	
... did not think about it.	.50	
... is not that good in these questions.	.48	
... is not aware of the influence of the others on the situation.	.35	
Concern for others		.86
... wants to do good for everybody.	.64	
... wants to give chances to others as well.	.64	
... feels responsible for others.	.63	
... wants to give something to others.	.57	
... wants to share profits in a fair way.	.60	
... wants to split the profit equally.	.71	
... wants to give the other the opportunity to get some profit.	.64	
Fear		.75
... feels unsure about taking a risk.	.43	
... fears the unpleasant consequences in future cooperation.	.33	
... fears to be rejected.	.50	
... is scared.	.55	
... does not want to be the sucker.	.36	
... is terrified the other owners will laugh.	.45	
... is afraid of being exploited by others	.31	
... is scared to have a fight with the other owners.	.44	

Table 3

Continued

Attribution scale	Item-total correlation	Cronbach's α
... is frightened to blow up the good relations with the other owners.	.48	
Greed		.88
... has an urge to possess.	.68	
... wants to earn as much as possible.	.69	
... wants to earn more than a reasonable outcome.	.65	
... has a high need to achieve.	.64	
... prefers to get as much as possible.	.74	
... wants to get more than others.	.73	
Efficiency		.75
... wants to make an accurate decision.	.39	
... wants to handle this consequently.	.39	
... wishes to choose a solution that is efficient for everyone.	.52	
... wants to choose the best solution.	.63	
... feels this is the best choice for him/her and the others.	.51	
... thinks this is the most reasonable solution.	.50	
Fairness		.75
... believes this is a fair choice for everyone.	.58	
... thinks this is a sincere choice for everybody.	.54	
... considers this choice as most justified.	.53	
... wants to act honestly.	.42	
... finds the most fair choice.	.50	

Table 4

Correlations Between Attribution Scales

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Ignorance	2.52	0.68	—				
2. Concern for others	2.39	0.68	.05	—			
3. Fear	2.82	0.61	.31*	.04	—		
4. Greed	3.18	0.90	.03	-.58*	.04	—	
5. Efficiency	3.25	0.63	-.06	.62*	.05	-.45*	—
6. Fairness	3.11	0.71	-.13	.69*	.01	-.46*	.65*

* $p < .001$.

ignorance ($M = 2.53$, $SD = 0.66$) to those of their cooperative counterparts ($M = 2.52$, $SD = 0.68$), $F(1, 192) = 0.12$, ns , $\eta^2 = .00$. Noncooperative targets were not attributed more fear ($M = 2.77$, $SD = 0.62$) than were cooperative targets ($M = 2.88$, $SD = 0.60$), $F(1, 192) = 0.98$, ns , $\eta^2 = .01$.

A nonsignificant effect of dilemma type was obtained for prosocial orientation (commons dilemma: $M = 2.91$, $SD = 0.71$; anticommons dilemma: $M = 2.85$, $SD = 0.44$), $F(1, 192) = 2.58$, ns , $\eta^2 = .01$. The effect of dilemma type was significant for ignorance ($M_s = 2.43$ and 2.61 , $SD = 0.68$ and 0.66 , for commons and anticommons dilemmas, respectively), $F(1, 192) = 4.01$, $p < .05$, $\eta^2 = .02$; and fear ($M_s = 2.70$ and 2.94 , $SD_s = 0.58$ and 0.61 , for commons and anticommons dilemmas, respectively), $F(1, 192) = 7.29$, $p < .01$, $\eta^2 = .04$.

However, all of these main effects were further qualified by the interaction effect between dilemma type and cooperativeness of target, which was significant for prosocial orientation, $F(1, 192) = 28.12$, $p < .001$, $\eta^2 = .13$; ignorance, $F(1, 192) = 15.44$, $p < .001$, $\eta^2 = .07$; and fear, $F(1, 192) = 6.58$, $p < .05$, $\eta^2 = .03$. These interaction effects are depicted in Figures 1, 2, and 3.

Large differences in attributions between noncooperative and cooperative targets in the commons dilemma, as compared to the anticommons dilemma, were obtained in the case of prosocial orientation. In particular, it was revealed that noncooperative targets ($M = 2.42$, $SD = 0.49$) were judged lower on prosocial orientation than were cooperative targets ($M = 3.46$, $SD = 0.46$) in the commons dilemma. This effect was less pronounced in the anticommons dilemma ($M_s = 2.62$ and 3.04 , $SD_s = 0.36$ and 0.41 , for cooperative and noncooperative targets, respectively). Duncan's post hoc analyses revealed significant differences ($p < .05$) between the cell means.

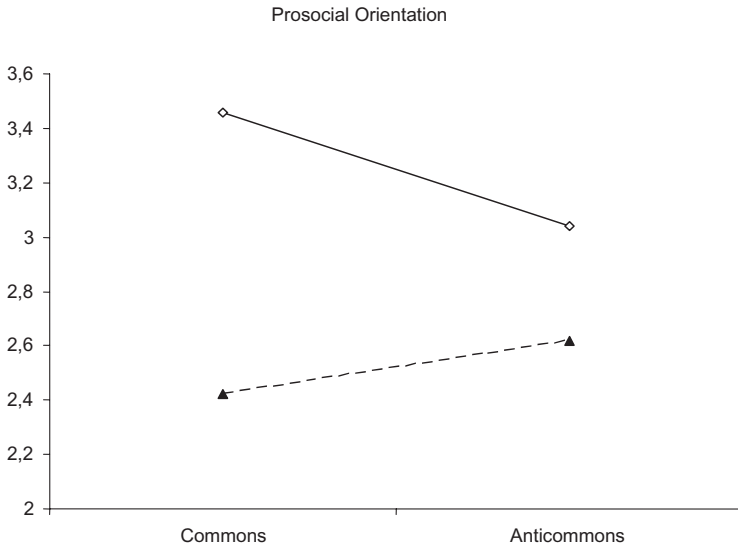


Figure 1. Interaction effects between dilemma type (commons vs. anticommons) and cooperativeness of target on prosocial orientation.

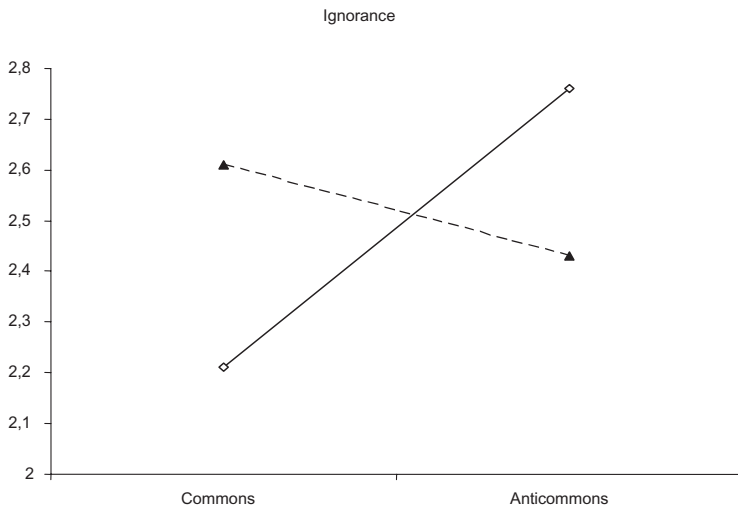


Figure 2. Interaction effects between dilemma type (commons vs. anticommons) and cooperativeness of target on ignorance.

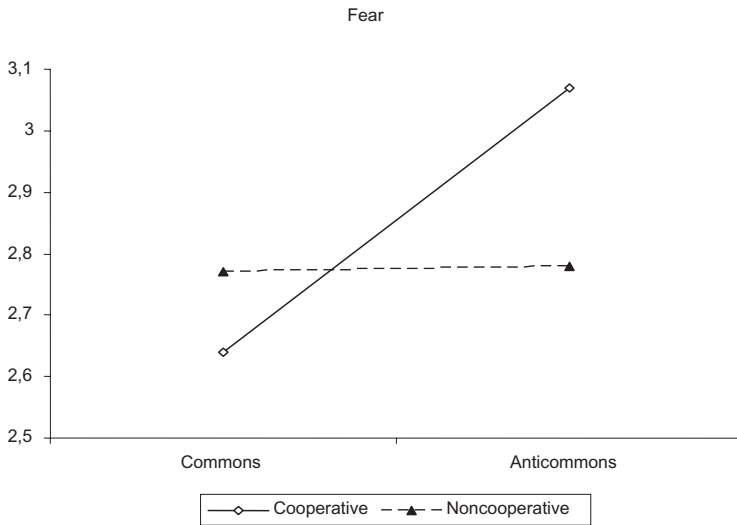


Figure 3. Interaction effects between dilemma type (commons vs. anticommons) and cooperativeness of target on fear.

Crossover interaction effects were obtained for ignorance and fear. These effects reveal higher levels of attributed ignorance ($M = 2.62$, $SD = 0.70$) and fear ($M = 2.76$, $SD = 0.60$) among noncooperative compared to cooperative targets in the commons dilemma ($M_s = 2.21$ and 2.64 , $SD_s = 0.60$ and 0.55 , respectively). These results corroborate previous findings obtained on these attributions (see Van Lange et al., 1990). Conversely, in the anticommons dilemma, cooperative targets were attributed more ignorance ($M = 2.77$, $SD = 0.67$) and fear ($M = 3.09$, $SD = 0.55$) than were noncooperative targets ($M_s = 2.43$ and 2.78 , $SD = 0.60$ and 0.64 , respectively), which opposed previous attribution studies. Duncan's post hoc test reveals that the level of ignorance attributed in the commons/cooperation condition was significantly lower than in the other conditions, whereas these attributions were significantly higher in the anticommons/cooperation condition. With respect to fear attributions, the anticommons/cooperative condition elicited significantly higher ratings than did the other three conditions (which did not significantly differ from each other).

In previous studies (Hine & Gifford, 1996; Liebrand et al., 1986; Van Lange et al., 1990), it was shown that participants' own cooperativeness was important in explaining these attributions. To test for the possibility that participants' own cooperativeness might have biased the present findings, we included participants' bids as a covariate in the ANOVAs. It was revealed

that in all cases, the covariate did not yield a significant effect, $F(1, 191) < 2.07$, *ns*, and all previously reported effects remained significant after inclusion of the covariate.

Discussion

Studies in the legal and economic literature have convincingly shown that the anticommons dilemma leads to important welfare losses (Buchanan & Yoon, 2000; Heller, 1998; Heller & Eisenberg, 1998; Parisi et al., 2005), revealing even more severe and problematic consequences than the commons dilemma (Vanneste et al., 2006). Why, then, do people claim higher prices in the anticommons dilemma than the amount they would simply take from an equivalent commons dilemma? Notwithstanding important structural differences in an economic and legal sense, we explicitly focus here on psychological explanations.

Indeed, from a psychological point of view, the identification of subjective factors that underlie people's behavior in the anticommons dilemma constitutes an important, yet unexplored avenue for research. We compared the differential effects of anticommons and commons dilemmas on psychological variables, applying the scenario methodology developed by Vanneste et al. (2006) in economic literature. We reasoned that attributions generated to explain a target's cooperative or noncooperative behavior—an indirect method of assessing the psychological properties of situations—are indicative of how people construe the commons and anticommons dilemmas.

The present research aimed to clarify two important issues. First, because of the limited number of prior studies, we investigated whether attributions for cooperativeness as reported in previous research were substantiated. Second, and more importantly, we investigated to what extent these attributions were used in the commons and anticommons dilemmas.

With respect to the first issue, our results reveal that concern for others, (low levels of) greed, efficiency, and fairness were highly interrelated and, in fact, probe into the same general construct of prosocial orientation. In line with our expectations, it was shown that noncooperative targets were attributed less prosocial orientation, compared to cooperative targets. With respect to ignorance and fear, the results in the commons dilemma were completely consistent with our expectations corroborating previous reports (see Hine & Gifford, 1996; Van Lange et al., 1990). These results suggest that the scenario methodology used in the present study was successful in eliciting the predicted attributions.

The second aim of the present study pertained to interaction effects between cooperativeness of target and dilemma type. For prosocial orientation, the results generally reveal greater differences between attributions for the behavior of cooperative and noncooperative targets in the commons dilemma, whereas these differences were somewhat curbed in the anticommons dilemma. Separate analyses of these interaction effects were repeated for concern for others, (low levels of) greed, efficiency, and fairness, yielding a similar pattern of results. However, although less spectacular than in the commons dilemma, it was shown nevertheless that noncooperators in the anticommons dilemma were judged as significantly lower in prosocial orientation.

Attributions for ignorance and fear departed from this pattern of results. Analogous to previous studies, noncooperative behavior was attributed to a higher extent to the target's ignorance and fear in the commons dilemma. Conversely, in the anticommons dilemma, noncooperativeness was judged to be indicative of low levels of ignorance and fear.

The present findings thus provide us with important insights into how people construe the anticommons dilemma, and they allow us to go into greater detail to construct a psychological profile of this dilemma. Hence, besides the differential legal and economic implications of the commons and anticommons property regime, the present results seem to indicate that these property regimes can also be reduced to differences in perception in a psychological sense. Based on the assumption that situations elicit norms about how people should behave (see Stouten, 2005; Weber et al., 2004), we assume that the commons and anticommons dilemmas constitute different contexts and that these particular contexts lead to different definitions of the situation, resulting in other behavioral patterns.

In the remainder, we will focus on attributions of (low levels of) greed, efficiency, fairness, and concern for others. Decisive differences in attributions of ignorance and fear between the anticommons and commons dilemmas were revealed, and their implications will be discussed. Finally, we will point to other characteristics of the anticommons dilemma that might represent interesting avenues for studying cooperativeness in future research.

Prosocial Orientation

It was shown that attributions of prosocial orientation—concern for others, (low levels of) greed, efficiency, and fairness—were strongly interrelated and that these attributions highly differentiated between noncooperative and cooperative behavior in the commons dilemma. Despite the fact that differential effects of these attributions were less pronounced in the anticom-

mons dilemma, they still remained significant. In other words, variations in cooperativeness in the anticommons dilemma are believed to be (at least partly) because of the same reasons as cooperativeness in the commons dilemma. As such, in both types of dilemmas, noncooperators are perceived as always wanting to win the largest gains, and cooperators are perceived as having a great desire to use the resource efficiently and having greater concern for others.

However, the present results also make clear that the operation of prosocial motives is not as easily inferred in the anticommons dilemma as it is in the commons dilemma. Noncooperative behavior is perceived as less indicative of the target's low levels of prosocial orientation in the anticommons dilemma than in the commons dilemma. Thus, although in the anticommons dilemma noncooperative people are perceived to be driven by lower levels of prosocial orientation, their behavior does not seem to profoundly violate the normative criteria elicited by the particular context. Conversely, the commons dilemma provides us with a context in which low levels of the target's prosocial orientation elicited by noncooperativeness may be considered ethically inappropriate. In sum, because these dilemmas presumably elicit other standards of behavior, level of cooperativeness is much more indicative of the operation of these motives in the commons dilemma than in the anticommons dilemma.

Ignorance and Fear

Unlike previous findings (see Hine & Gifford, 1996; Van Lange et al., 1990), in the anticommons dilemma, ignorance was attributed more to cooperative behaviors than to noncooperativeness. Accordingly, unlike in previous studies, in the anticommons dilemma, fear was attributed more to cooperators.

The differential use of ignorance attributions for cooperative behavior in the commons and anticommons dilemmas suggests that these dilemmas call for another rationality principle (for an analogous line of reasoning, see Van Lange et al., 1990). In defining this other principle, it is worthwhile to link Liebrand et al.'s (1986) might over morality principle to normative behavior in commons and anticommons dilemmas. That is, we argue that it is possible that the norms associated with these dilemmas are closely tied to individual and collective rationality. Indeed, it has been shown repeatedly that cooperative behavior in social dilemmas can be accounted for by normative considerations (Van Dijk & Wilke, 1997), such as social responsibility (De Cremer & Van Lange, 2001; Enzle, Harvey, & Wright, 1992; Fleishman, 1980; Kerr, 1992; Parks & Rumble, 2001).

According to these studies, choice behavior in social dilemma situations can thus be understood in terms of the moral obligation to further the collective's interest (Van Dijk & Wilke, 1997). If the commons dilemma calls for behavior that preserves the collective's interest, then cooperativeness should be considered as the appropriate behavior for this situation. Noncooperative behavior, then, may even elicit anger and vengeance (e.g., Stouten, 2005). Hence, the present finding that cooperative behavior is considered to reflect low levels of ignorance in the commons dilemma is consistent with the perspective that most people would agree that the dilemma itself calls for a relatively high degree of collective rationality. Conversely, when noncooperative behavior is generally considered in similar terms in the anticommmons dilemma, it can be deduced that most people would agree that this dilemma calls for strong, potent behavior, and much less so for moral concerns. In other words, the anticommmons dilemma seems to provide a context that induces individual rationality.

The results on the fear attributions are also interesting. It should be mentioned first, however, that unlike Van Lange et al. (1990), we did not obtain significant differences between noncooperative and cooperative targets for fear attributions in the commons. Hine and Gifford (1996) also failed to replicate the fear effect. According to these authors, one should distinguish between items that address the "sucker issue" (e.g., "is afraid of being exploited by others") and more general items that apply equally well to different types of fear, such as fear of extinguishing the source (e.g., "feels unsure about taking a risk"). In accordance with Hine and Gifford, analysis with the two most prototypical sucker items reveals a significantly lower level of fear for cooperative targets ($M = 2.63$) than for noncooperative targets ($M = 3.11$), $F(1, 191) = 18.37$, $p < .001$. We also obtained a significant effect for the general fear items, revealing that cooperative targets were attributed a higher level of fear ($M = 3.17$) than were noncooperative targets ($M = 2.70$), $F(1, 191) = 13.54$, $p < .001$. Thus, cooperative targets seem to be attributed particularly low levels of fear of being exploited and high levels of general fear that could translate into fear for exhausting the resource. Clearly, then, fear is not a one-dimensional variable, and one should at least distinguish between fear of being a sucker and general fear.

The most interesting finding with respect to fear attributions, however, was that cooperatives were judged as more fearful in the anticommmons dilemma. Many items of our fear scale referred to future cooperation with the co-owners of the common good. In the anticommmons dilemma, it is clear that when the buyer declines the bids of the various owners, the group members still have to continue cooperating with each other. Thus, cooperative targets are perceived to be afraid to ask their share because asking too much money for one's belongings may jeopardize future cooperation.

Study Limitations

The present results indicate that people who do not cooperate in the anticommons dilemma are considered low in prosocial orientation, as well as experiencing low levels of anxiety and fear and being less ignorant in their assessment of this typical situation. Is it possible that the present results were obtained because the negative consequences of the anticommons dilemma were hidden for the participants and, therefore, they did not fully comprehend and “internalize” (see Schulz, Parisi, & Depoorter, 2003) the situation? We cannot exclude the possibility that participants failed to fully understand the situation, but at the same time, it seems to be unlikely that the present results can be fully attributed to such ambiguities because the analysis of the bids replicates previous findings (Vanneste et al., 2006).

A limitation of the present study is that it is yet unclear exactly why the present dilemmas produce these effects and which specific characteristic of these dilemmas can be held accountable for the obtained differences. As Vanneste et al. (2006) tried to construct more or less prototypical instances of anticommons and commons dilemmas, they did not typically focus on the various subcomponents that constitute these dilemmas. They tried instead to create a global situation that is typically an anticommons or commons dilemma. One could argue, for instance, that the present differences partly stem from framing effects (e.g., Van Dijk & Wilke, 1997, 2000). Thus, the crucial difference between these two dilemma types may lie in the fact that these two dilemmas are differently presented and labeled, and it is possible that the observed differences between these two dilemma types may be fully attributed to these different descriptions. Indeed, the material value of the common property is equal for the commons and anticommons property rule, and differences in people’s reactions, therefore, can be accounted for by the social construction of this value. The present dramatic effects of framing a social dilemma in commons or anticommons terms underscore the pivotal role of social construction and remind us of the huge impact thereof.

Many other characteristics varied between the two present scenarios. For example, the collective consequences of noncooperation may be experienced as being more severe in the commons dilemma. In the commons dilemma, the consequence of noncooperation is that the common good will be exhausted, which would imply that the future earnings of all owners would be reduced. Conversely, in the anticommons dilemma, participants may have inferred that the owners were still in the position to generate future profits. If this would be the case, the consequences of noncooperation may seem less severe in the anticommons scenario than in the commons scenario. The question then, of course, is as follows: Are the present differences caused by structural

differences between the two dilemma types, or are they caused by the fact that in this particular operationalization, the consequences of collective non-cooperation were presented as more severe in one of the scenarios? Only future research can provide an answer to this question. However, to make things even more complicated, the salience of consequences of one's actions may also be a psychological characteristic of particular dilemma types. In fact, Vanneste et al. (2006) argued that in the anticommons dilemma, co-owners do not have a sense of harm when they exercise their property rights, even though others may suffer a possible economic prejudice. In economic theory (e.g., Schulz et al., 2003), the low salience of the harmful consequences of one's actions has been referred to as *externalities*.

There are still other variables that may underlie the present effects. Are the present differences obtained because of the difference between preserving (salient in the commons dilemma) and harvesting (salient in the anticommons dilemma)? Are the present effects caused because the commons dilemma is about a long-term situation, whereas the anticommons dilemma comes over as a one-shot situation? All of these characteristics vary together in the two present scenarios. At this moment, it is impossible to say exactly what drives the dilemma-type effect. The goals of the present study, however, were far more modest as we only tried to compare typical instances of both dilemmas, which have been shown previously to elicit different price-setting behavior (Vanneste et al., 2006). Still, the identification of the exact factors responsible for the differences between these dilemmas will require more fine-tuned and in-depth research efforts, and surely represents an interesting and necessary avenue for future studies.

References

- Buchanan, J. M., & Yoon, Y. J. (2000). Symmetric tragedies: Commons and anticommons. *Journal of Law and Economics*, 43, 1–13.
- Costa, P. T., & McCrae, R. R. (1992). *Professional manual: Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO-FFI)*. Odessa, FL: Psychological Assessment Resources, Inc.
- Dawes, R. M. (1980). Social dilemmas. *Annual Review Psychology*, 31, 169–193.
- De Cremer, D., & Van Lange, P. A. M. (2001). Why prosocials exhibit greater cooperation than proselves: The role of social responsibility and reciprocity. *European Journal of Personality*, 15, S5–S18.
- Dreyfuss, R. C. (2000). International licensing of intellectual property: UCITA in the international marketplace. Are we about to export bad innovation policy? *Brooklyn Journal of International Law*, 26, 49–57.

- Eek, D., & Biel, A. (2003). The interplay between greed, efficiency, and fairness in public goods dilemmas. *Social Justice Research, 16*, 195–215.
- Enzle, M. E., Harvey, M. D., & Wright, E. F. (1992). Implicit role obligations versus social responsibility in constituency representation. *Journal of Personality and Social Psychology, 62*, 238–245.
- Fleishman, J. A. (1980). Collective action as helping behavior: Effects of responsibility diffusion on contributions to a public good. *Journal of Personality and Social Psychology, 38*, 629–637.
- Funder, D. C. (1982). On the accuracy of dispositional versus situational attributions. *Social Cognition, 1*, 205–222.
- Funder, D. C., & Colvin, R. (1991). Explorations in behavioral consistency: Properties of persons, situations, and behaviors. *Journal of Personality and Social Psychology, 60*, 773–794.
- Hardin, G. (1968). Tragedy of the commons. *Science, 162*, 1243–1248.
- Heller, M. A. (1998). The tragedy of the anticommons: Property in the transition from Marx to markets. *Harvard Law Review, 111*, 621–688.
- Heller, M. A., & Eisenberg, R. S. (1998). Can patents deter innovation? The anticommons in biomedical research. *Science, 280*, 698–701.
- Hine, D. W., & Gifford, R. (1996). Individual restraint and group efficiency in commons dilemmas: The effects of two types of environmental uncertainty. *Journal of Applied Social Psychology, 26*, 993–1009.
- Kerr, N. L. (1992). Efficacy as a causal and moderating variable in social dilemmas. In W. B. G. Liebrand, D. M. Messick, & H. A. M. Wilke (Eds.), *Social dilemmas: Theoretical issues and research findings* (pp. 59–80). New York: Pergamon.
- Komorita, S. S., & Parks, C. D. (1995). Interpersonal relations: Mixed-motive interaction. *Annual Review of Psychology, 46*, 183–207.
- Liebrand, W. B. G., Jansen, R. W. T. L., Rijken, V. M., & Suhre, C. J. M. (1986). Might over morality: Social values and the perception of other players in experimental games. *Journal of Experimental Social Psychology, 22*, 203–215.
- Luce, R. D., & Raiffa, H. (1957). *Games and decisions: Introduction and critical survey*. London: Wiley.
- Mahoney, J. D. (2000). The market for human tissue. *Virginia Law Review, 38*, 103–123.
- Messick, D. M., Wilke, H., Brewer, M. B., Kramer, R. M., Zemke, P. E., & Lui, L. (1983). Individual adaptations and structural change as solutions to social dilemmas. *Journal of Personality and Social Psychology, 44*, 294–309.
- Morriss, A. P., & Meiners, R. E. (2000). The destructive role of land use planning. *Tulane Environmental Law Review, 14*, 107–141.

- Parisi, F., Schulz, N., & Depoorter, B. (2005). Duality in property: Commons and anticommons. *International Review of Law and Economics*, 25, 578–591.
- Parks, C. D., & Rumble, A. C. (2001). Elements of reciprocity and social value orientation. *Personality and Social Psychology Bulletin*, 27, 1301–1309.
- Rose, C. M. (1999). From local to global commons: Private property, common property, and hybrid property regimes. Expanding the choices for the global commons. Comparing newfangled tradable allowance schemes of old-fashioned common property regimes. *Duke Environmental Law and Policy Forum*, 10, 46–71.
- Ross, L. (1977). The intuitive psychologist and his shortcomings: Distortions in attribution processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 174–221). New York: Academic Press.
- Schulz, N., Parisi, F., & Depoorter, B. (2003). Fragmentation of property: Towards a general model. *Journal of Institutional and Theoretical Economics*, 159, 594–613.
- Stouten, J. (2005). *Virtue summons the fury: Coordination rules and fairness in social dilemmas* (Kurt Lewin Institute Dissertation Series). Amsterdam, The Netherlands: Kurt Lewin Institute.
- Van Dijk, E., & Wilke, H. (1997). Is it mine or is it ours? Framing property rights and decision making in social dilemmas. *Organizational Behavior and Human Decision Making Processes*, 71, 195–209.
- Van Dijk, E., & Wilke, H. (2000). Decision-induced focusing in social dilemmas: Give-some, keep-some, take-some, and leave-some dilemmas. *Journal of Personality and Social Psychology*, 78, 92–104.
- Van Lange, P. A. M., Liebrand, W. B. G., & Kuhlman, D. M. (1990). Causal attribution of choice behavior in three N-person prisoner's dilemmas. *Journal of Experimental Social Psychology*, 26, 34–48.
- Vanneste, S., Van Hiel, A., Parisi, F., & Depoorter, B. (2006). From tragedy to disaster: Comparing the commons and anticommons dilemmas. *International Review of Law and Economics*, 26, 104–122.
- Weber, J. M., Kopelman, S., & Messick, S. M. (2004). A conceptual review of decision making in social dilemmas: Applying a logic of appropriateness. *Personality and Social Psychology Review*, 8, 281–307.
- Wilke, H. A. M. (1991). Greed, efficiency, and fairness in resource management situations. In W. Stoeber & M. Hewstone (Eds.), *European review of social psychology* (Vol. 2, pp. 165–187). New York: John Wiley & Sons.