

ARE SOCIAL REPRESENTATIONS CONSISTENT WITH SOCIAL STRATEGIES? MACHIAVELLIANISM, OPPORTUNISM, AND ASPECTS OF LAY THINKING

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Abstract: The present study aimed to investigate if there are differences between cooperators and defectors when they represent some relevant “lay” notions implicated in the Evolutionary Game Theory’s approach of cooperation, namely “sincerity” and “revenge”. Different kinds of cooperators and defectors were identified by two scales, the Mach IV scale and the scale of economic opportunism, in a sample of 504 participants. The data on social representations and the attitudes towards the relevant notions were collected using the method of free associations, to which participants were asked to attribute a positive, negative or neutral value, depending on the more or less positive, negative or neutral affects, values or experiences they related to their own free associations. The hypothesis of this study was that differences between cooperators and defectors emerge through the attitudinal dimension of their representations rather than through their cognitive content and structure. The results confirmed the hypothesis, showing that the content and structure of the examined representations do not seem to differentiate cooperators and defectors even in cases of extremely cooperative or extremely defecting participants, as identified by the scales used. Results also showed that the attitudinal dimension of the examined representations could better discriminate cooperators from defectors.

Key words: Economic opportunism; Machiavellianism; Social representations.

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INTRODUCTION

The present study aimed to investigate if there are any differences between cooperators' and defectors' social representations of some 'lay' notions implicated in the Evolutionary Game Theory's (EGT; Axelrod, 1984; Smith, 1982) approach of cooperation. The study aimed to investigate the existence of such differences among different kinds of cooperators and defectors. Therefore, two scales were used to measure cooperation and defection, namely the Mach IV scale (Christie & Geis, 1970) and the scale of economic opportunism (Sakalaki, Richardson, & Thépaut, 2007).

Illustrated by Nicolo Machiavelli's writings and operationalised by Christie and Geis's (1970) research, the construct of Machiavellianism describes a behavioral and relational strategy which involves manipulating others in order to serve personal interests (Wilson, Near, & Miller, 1996). Machiavellianism has three main components which the Mach IV questionnaire proposed by Christie and Geis (1970) includes: cynicism, manipulateness of others, and the principle that "the ends justify the means" (Gunnthorsdottir, McCabe, & Smith, 2002). The scale permits distinction between persons in terms of their cooperativeness (Wilson, Near, & Miller, 1998), manipulateness for personal gain against the interests of others (Wilson et al., 1996; Jones & Kavanagh, 1996; Harrell & Hartnagel, 1976), cheating or lying (De Paulo & Rosenthal, 1979; Geis & Moon, 1981) and reciprocating cooperativeness and trust (Gunnthorsdottir et al., 2002).

According to Williamson (1985), opportunism is the attempt to promote personal interests by means of deceit, lying and treachery. Opportunism is the attempt to manipulate information, to disseminate incomplete or misleading information in order to conceal or disguise reality and to defraud or confuse others. While Machiavellianism is a strategy which applies to social relationships and therefore could be considered as a *political* strategy of defection, economic opportunism is an *economic* strategy of defection. Besides, the scale of economic opportunism was conceived to measure the propensity of defection in economic transactions. Economic opportunism operates in a quite anonymous and detached context, wherein the other agent is not necessarily a social partner or an acquaintance and where transparency and communication are often lacking (Dupuy, 1992). Therefore, economic opportunism must probably be a less rare and a less strongly socially rejected behaviour than Machiavellianism, since it mostly applies to impersonal, economic transactions. Economic opportunism is frequent in societies where the economy has come to dominate over politics, religion and other fields, like individualist societies. Recent studies have shown that economic opportunism is significantly associated to individualism (Sakalaki, Kazi, & Karamanoli, 2007).

A common feature of Machiavellianism and opportunism is that they both rely on deceit and on the manipulation of information, rather than on brute force and coercion (Thépaut, 2002). Besides, there is a positive correlation between economic opportunism and Machiavellianism (Sakalaki, Richardson, et al., 2007). Furthermore, the Chance factor of the Economic Locus of Control Scale (Furnham, 1986) is positively correlated with Machiavellianism and with economic opportunism, showing that both Machiavellians and economic opportunists have an external economic locus of control (Sakalaki, Kanellaki, & Richardson, in press).

Economists and theoreticians of the EGT have offered some of the most brilliant approaches of the situational and cognitive factors that support cooperative or non-cooperative strategies. These approaches contain rich hypotheses of fundamental theoretical interest, some of which have not been empirically tested yet. The work of Axelrod (1984, 2000) showed that the establishment of evolutionary stable cooperative strategies which are based on the norm of reciprocity and are capable to enhance trust, presupposes continuous transactions between agents, who therefore can predict how their partner will act in the future. Under such conditions, opportunistic or exploitative behaviours are likely to be turned against the opportunist or the exploiter himself. On the other hand, temporary or vulnerable relationships which do not produce the prospect of future interactions do not favour the evolutionary stability of cooperative strategies and are likely to lead to the establishment of defecting strategies.

Indeed, the tournaments organized by Axelrod (1984, 2000) showed that the development of cooperation during games of nonzero sum, such as “the prisoner’s dilemma”, presupposes the existence of sufficient opportunity that the players will meet later on in order to play again. If this condition is met, then the players will be interested in the outcome of their future interactions and thus will be encouraged to cooperate with each other. “Tit for tat”, that is, a cooperative strategy based on reciprocity which has proved to be both the most effective and the most likely to become evolutionary stable, is established collectively if the players have a sufficient opportunity to play together again in the future (Axelrod, 1984, 2000). The properties of “tit for tat” strategy are the following: (a) It is a “nice” strategy which consists in always playing “cooperation” the first time one plays and never be the one who betrays first as well as in cooperating for as long as the other player cooperates, which avoids useless conflicts; (b) It is a provokable strategy in the sense of stopping cooperation at a round following another player’s unjustified betrayal. Susceptibility makes the “tit for tat” strategy not exploitable; (c) It is an indulgent strategy which refers to not repeating reprisals after having counteracted a provocation, so as to avoid an escalation of useless reciprocal revenges; and, finally, (d) a transparent,

intelligible strategy that permits the other player to easily understand it and adopt it. For this to happen, multiple transactions between the players are necessary.

Considering Machiavellianism and opportunism from the point of view of the EGT can enrich theory and research hypotheses. It is known that cooperators can succeed if they manage to identify non-cooperators. In such a case, they can avoid any interaction with non-cooperators, in a kind of “doves’ conspiracy”, or, at least, cooperate with them for only the first time and then never again in the future, or they can continue interacting with the ‘malicious ones’ by following the rules of ‘tit for tat’ strategy. Obviously, rumour, observation or experience before each interaction makes the identification of non-cooperators much easier (Wilson et al., 1996). Most of the times, it is the cooperators who are more likely to be exploited by others, whereas the non-cooperators who are more likely to suffer from revenge, retaliation, or social exclusion. However, Gurtman (1992) showed that the tendencies ‘to get revenge against people too much’ and to ‘feel competitive even when the situation does not call of it’ are the two most important interpersonal problems of high Machiavellianism scorers. Therefore, the latter are predisposed to be more revengeful and more competitive towards others. On the other hand, social values like honesty and sincerity represent elements of vulnerability for cooperators, since those who have internalized such values have the propensity to adopt behaviours which can be exploited by defectors.

Lay thinking, including social representations (Moscovici, 1961, 1982), social-cognitive norms and beliefs, conventions and common knowledge (Shelling, 1960; Orléan, 1994) was often hypothesized and some times shown to have a crucial repercussion on people’s social practices (Abric, 1994; Beauvois & Joule, 1981; Guimelli, 1994) and economic behaviours (Sakalaki, 2002; Sakalaki, Richardson, & Bastounis, 2005). Yet, the question of the consistency between social representations and practices demands further investigations.

The present study

Given the above theoretical background, the present study aimed to explore the cooperators’ and defectors’ lay thinking concerning two crucial notions deriving from the EGT, namely *sincerity* and *revenge*. More precisely, the study aimed to investigate the presence of representational specificities in cooperators and defectors as identified by the Mach IV scale and the scale of economic opportunism with respect to the notions of sincerity and revenge. It aimed to investigate the content and structure of the social representations of these critical notions in groups of cooperators, such as low Machiavellians (low Machs) or low economic opportunists,

in groups of defectors, such as high Machiavellians (high Machs) or high economic opportunists, as well as in more extreme groups of cooperators consisting of participants simultaneously being low Machs and low economic opportunists, or more extreme groups of defectors consisting of participants simultaneously being high Machs and high economic opportunists. It also aimed to explore the attitudes towards sincerity and revenge of all the above groups.

A social representation consists of a commonly elaborated social thought which permits the apprehension and interpretation of social reality (Moscovici, 1961). Social representations are collectively constructed, consensual forms of thinking, shared by the members of a social group (Jodelet, 1989; Moscovici, 1982) and they can be regarded as cognitive organizations (Abric, 1994) that constitute sub-systems of a wider ideological system and, at the same time, define other narrower sub-systems such as attitudes which are associated with social representations (Rouquette & Rateau, 1998). Since any object of social representation can be considered as an attitudinal object (Moscovici, 1961), social representations seem to serve an evaluative function which allows placing the elements of a representation along an evaluative, attitudinal dimension with a positive and a negative pole (Abric & Tafani, 1995; De Rosa, 1993; Moliner, 1994). Attitudes towards social objects can be derived from the evaluative, attitudinal components of social representations and, while social representations objectify consensual social thinking about a social object, attitudes express affective, evaluative and pragmatic predispositions towards this social object (Moliner & Tafani, 1997).

It can be argued that when lay people deal with abstract notions, such as sincerity and revenge, which lack material substratum but rather refer to values, moral characteristics and judgments, the consensus of social representations will prime over the differentiations induced by individual characteristics, be they personality or moral specificities. Given that values, personality characteristics and moral stand or qualities are constructs mainly substantiated through language and wording – language being a highly conventional production of social groups that ensures social communication and coordination (Lewis, 1969) – the cognitive dimension of social representations of these constructs within the same society must reveal a highly consensual character, even if individuals' propensity to adopt these values and behave according to them may differ. By contrast, individual differences concerning the adherence to and the propensity to adopt these constructs will emerge through the attitudinal, evaluative dimension of social representations, since attitudinal differentiations do not disturb the necessarily conventional character of language, the main function of which is to preserve communication, coordination and common knowledge (Shelling, 1960).

Stemming from the above theoretical background, the hypotheses of this study were formulated as follows: (a) Differences between the content and structure of cooperators' and defectors' social representations of sincerity and revenge will not emerge, since social representations are consensual forms of social thinking (Hypothesis 1). (b) Differences between cooperators and defectors will emerge in the attitudinal dimension of their representations regarding their value-related judgments, affects, and preferences (Hypothesis 2).

The two hypotheses were studied in groups of cooperators (low Machs or low economic opportunists) and defectors (high Machs or high economic opportunists). They were also studied within a more extreme group of cooperators (participants simultaneously being low Machs and low economic opportunists) as well as a more extreme group of defectors (participants simultaneously being high Machs and high economic opportunists) in order to examine to what extent is there a consensus between cooperators and defectors concerning the examined notions of sincerity and revenge.

METHOD

Participants

Participants were 504 adults from Greece, 306 (60.8%) of which were women. Ages in our sample varied: 190 (37.8%) were 18 to 25 years old, 122 (24.2%) were 26 to 35 years old, another 95 (18.8%) were 36 to 45 years old and, finally, 97 (19.2%) were above 46 years old. Of the participants, females were 128 (67.5%) within the 18 to 25 age-group, 79 (64.8%) within the 26 to 35 age-group, 50 (52.6%) within the 36 to 45 age-group, and 49 (50.5%) within the over 46 years age-group. Participants' socioeconomic status (SES), based on their educational level, their family income, their profession and their fathers' profession, was as follows: of the participants, 442 (87.7%) belonged in the working class and in the lower middle class, while the remaining 62 (12.3%) belonged to the upper middle-class and the upper class.

Instruments

Economic Opportunism scale. The Economic Opportunism scale was constructed in Greek by the first author (Sakalaki, Kazi, et al., 2007; Sakalaki, Richardson, et al., 2007). The scale consists of 10 items rated on a 7-point Likert-type scale from 1 (strongly agree) to 7 (strongly disagree). Four of these items concerned situations of asymmetric information, offering statements expressing opportunistic behaviour (e.g., "Someone

who is applying for health insurance has the right to keep quiet about some illnesses, so as not to increase the premium”) or non-opportunistic behaviour (e.g., “If you are selling a used car, you are obliged to tell the prospective buyer about all its defects”). The mean score for the ten items (reversing the direction of scoring for the opportunistic items) provides a total score of opportunism. The internal consistency of the scale, using Cronbach’s alpha coefficient, in the sample of the present study was $\alpha = .70$.

Machiavellianism. Machiavellianism was assessed with the Mach IV scale translated in Greek by the first author (Sakalaki, Richardson, et al., 2007; Sakalaki et al., in press). The scale consists of 20 items also rated on a 7-point Likert-type scale from 1 (strongly agree) to 7 (strongly disagree) and was conceived to measure an individual’s disposition towards Machiavellian behaviour. Half of these items have a Machiavellian direction while half of them have a non-Machiavellian one. The mean score for the twenty items, reversing the direction of scoring for the Machiavellian items, provides a total score of Machiavellianism. Most of these items refer to social strategies, behaviours or situations, social interactions and social values (e.g., “The best way to manipulate others is to tell them what they want to hear”; “There is no excuse for lying”). The internal consistency of the scale, using Cronbach’s alpha coefficient, in the sample of the present study was $\alpha = .61$.

It needs to be noted that *t*-test showed that participants’ gender did not differentiate the score neither of Machiavellianism, $t(498) = 3.32, ns$, nor of economic opportunism, $t(501) = -4.805, ns$. By applying ANOVA with age and SES as independent variables, it was shown that age did not induce any statistically significant differentiations in the score of the Mach IV scale, $F(3, 500) = 1.316, ns$, or the Economic Opportunism scale, $F(3, 503) = .843, ns$. Finally, SES did not differentiate Machiavellianism, $F(3, 500) = 1.22, ns$, or economic opportunism, $F(3, 503) = 1.19, ns$.

Social representations and the free associations method

The data regarding the social representations of sincerity and revenge were gathered using the method of free associations. The sample was divided into two groups of 253 (Group A) and 251 (Group B) participants who were instructed to fill out free association tasks introduced by the instructions to “Write down the first three words that come to mind when you think of ...”. In Group A, the stimulus word was “sincerity” (in Greek *ελικρίνεια*). In Group B, the stimulus word was “revenge” (in Greek *εκδίκηση*).

After completing the free association task, participants were instructed to indicate whether they attribute a positive, negative or neutral value, to their own associations, by marking them with +, - or \pm , respectively, depending on the more or less positive, negative or neutral affects, experiences, values and attitudes they relate

to their own associations. The subjective evaluation of the terms produced was expected to reveal whether the notions presumed as important have a rather positive, negative or neutral affective value for participants according to their propensity to adopt a more or less cooperative or defecting strategy.

Analysis of the social representations. The corpus of free associations produced by the participants was initially analyzed with a thematic content analysis which permitted categorization and quantification of participants' free associations. After the content analysis, a structural approach of the social representations of "sincerity" and "revenge" was implemented by using the method proposed by Vergès (1994). The method relies on the juxtaposition of two criteria: (a) the frequency with which a specific category occurs, and (b) the rank of its appearance, meaning that if a word belonging to a specific category is the 1st, 2nd, or 3rd association proposed. The application of the criteria allows the identification of the important and salient elements of the examined representations. The mean frequency and the mean rank of the total number of occurring categories were calculated. All categories with a frequency higher than the mean frequency are regarded as major elements. All categories with a rank of appearance lower than the mean rank are regarded as strong, salient elements (Sakalaki, 2001). The categories were then cross-tabulated in a 2 x 2 matrix. In the top left cell the elements of both high frequency and strong rank are presented. Those elements compose the central core of the examined representations. The bottom right cell includes rare elements of high rank and identifies the peripheral elements of the representation. In the remaining cells, of either high frequency and weak rank or low frequency and strong rank, the dynamic zone of the representation's periphery is identified, that is, the zone susceptible to change and evolve.

RESULTS

Analysis 1: Social representations of sincerity and revenge for cooperators (low Machs or low economic opportunists) and defectors (high Machs or high economic opportunists)¹

Participants were divided into four sub-samples using the score at the scales of economic opportunism and Mach IV as a criterion. The sub-samples formed were: (a) high Machs, consisting of participants with a mean score higher than 3.9 at Mach IV (3.9 equals the median of the participants' scores at the Mach IV scale); (b) low

¹ Indicatively, for the high and low Machs' representations of sincerity, an analytical presentation is offered in Tables 1 and 2. For representations of revenge brief descriptions concentrated on the most important points are provided.

Machs, consisting of participants with a mean score less than or equal to 3.9 at the Mach IV; (c) high opportunists, consisting of participants with a mean score higher than 4.2 at the scale of economic opportunism (4.2 equals the median of the participants' scores at the scale of economic opportunism); (d) low opportunists, consisting of participants with a mean score less than or equal to 4.2 at the scale of economic opportunism. The structure of the social representations of "sincerity" and "revenge" was separately analyzed for each of the above sub-samples so as to reveal possible existing differences across groups of participants who have a propensity for either cooperating or defecting strategies.

The presentation of the results of the analysis is mostly concentrated on the central core of the representations, as the most important and informative part of their structure, the one which organizes the representation and mostly defines its meaning.

Social representations of "sincerity". The structural analysis of the social representation of sincerity was performed in order to examine if cooperators and defectors represent differently this critical notion inferred from the EGT. It was found that both low Machs' (152 participants) and high Machs' (98 participants) representations of sincerity were composed of the same elements. The structural analysis showed that the most frequent element contained in the central core of the representation's structure, that is, the fundamental element, was in both cases "truth". However, for low Machs, this fundamental element was followed by "honesty" which came next in decreasing frequency whereas for high Machs "friendship and family relationships" followed (see Tables 1 and 2).

The analysis also showed that economic opportunism did not differentiate the examined social representation of sincerity. In the cases of both low opportunists (148

Table 1. Low Machs' representation of "sincerity" (N = 152 participants)

Frequency	Low rank (< 2.09)		High rank (≥ 2.09)	
	f	Rank	f	Rank
High (> 28.26)				
- Truth	87	1.71	- Friendship and family relationships	71 2.11
- Honesty	55	1.71	- General and imprecise moral values	54 2.28
- Respect	34	1.79		
- Trust	31	2.06		
Low (≤ 28.26)				
- Clarity	6	1.33	- Lies and fraud	25 2.12
- Peacefulness	2	2.00	- Reliability	16 2.19
			- Rare/does not exist	15 2.13
			- Courage/strength	13 2.31
			- God/religion	6 2.67
			- Negative characterisations of sincerity	4 2.50
			- Reciprocity norm	3 2.00

Note: Mean frequency of 15 categories = 28.26; Mean rank of 15 categories = 2.09; No response = 0; Total of proposed associations = 460; Other responses: 38 words (8.22% of total of words).

Table 4. Frequencies of positive, negative, neutral or absence of sign attached by the participants to their own associations within the sub-samples of low and high Machs

	Positive		Negative		Neutral		Absence	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Low Machs								
Sincerity	346	75.80	42	9.30	35	7.60	33	7.20
Revenge	61	12.32	301	60.8	68	13.73	65	13.13
High Machs								
Sincerity	190	64.50	31	10.70	46	15.50	27	9.30
Revenge	41	16.07	157	61.56	40	15.68	17	6.66

Table 5. Frequencies of positive, negative, neutral or absence of sign attached by the participants to their own associations within the sub-samples of low and high opportunists

	Positive		Negative		Neutral		Absence	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Low opportunists								
Sincerity	325	73.19	50	11.26	48	10.81	21	4.72
Revenge	69	13.77	327	65.26	71	14.17	34	6.78
High opportunists								
Sincerity	214	68.58	24	7.69	32	10.25	42	13.46
Revenge	34	13.49	132	52.38	38	15.07	48	19.04

value to their own associations to the stimulus word ‘revenge’, but were more neutral towards “sincerity”. Finally, cooperators, that is, low opportunists or low Machs, more often associated negative evaluations to their associations to the stimulus word “revenge”, or they omitted giving any evaluation at all.

Analysis 2: Social representations of “sincerity” and “revenge” for extremely cooperative participants (simultaneously low Machs and low economic opportunists) and extremely defecting participants (simultaneously high Machs and high economic opportunists)

A second analysis of the social representations of “sincerity” and “revenge” intended to investigate the content, structure and attitudinal dimension of these representations within more extreme groups of participants of either cooperative or defecting propensity.

In this analysis, the social representations of the two critical notions were investigated within two distinct sub-samples. The first one consisted of those participants who were found to be at the same time both low Machs and low economic opportunists. This group could be perceived as a group of participants who presented a highly cooperative overall propensity since they were identified as cooperators by

both scales used in the present study. The second group, on the other hand, consisted of those participants who were simultaneously identified as defectors by both scales used. Thus, it consisted of participants being at the same time both high Machs and high economic opportunists, that is, participants that could be perceived as of a rather high overall defecting propensity.

Social representations of "sincerity". The structural analysis of the social representations of "sincerity" within the group of highly cooperative participants (consisting of 100 participants simultaneously being low Machs and low economic opportunists) showed that the representation's central core consisted of the elements "truth", "honesty", and "respect", with "truth" being the most frequent or fundamental element of the central core. In the case of the group of highly defecting participants (consisting of 50 participants simultaneously being high Machs and high economic opportunists), the central core of the representations consisted of the elements "truth", "honesty", "general and imprecise moral values", and "respect", while once again "truth" was the central core's fundamental element. Therefore, the analysis showed that "sincerity" was represented quite similarly by the two groups of a rather strong either cooperative or defecting propensity.

Social representations of "revenge". The analysis revealed that the structure of social representations of "revenge" was quite similar between the groups of highly cooperative and of highly defecting participants, which numbered 120 and 39 participants respectively. In the former case, the representation's central core consisted of the elements "human passions and psychological states", "ways of getting revenge and/or negative implications of revenge", and "moral faults". In the second case, the representation's central core consisted of "human passions and psychological states", "ways of getting revenge and/or negative implications of revenge", "moral faults", and "condemnation of revenge". In both cases, the category of associations "human passions and psychological states" was found to be the fundamental element of the representation's central core.

Evaluation of free associations. Once again, the frequencies of positive, negative and neutral evaluations, as well as the frequency with which participants omitted giving any evaluation, were summed up on the total of responses within the two subsamples of "extremely cooperative" and "extremely defecting" participants. The χ^2 test was used to statistically examine if there were significant differences between the recorded frequencies.

Participants' evaluations of their associations to the stimulus word "sincerity" were found to statistically differ between the group of highly cooperative participants and the group of highly defecting participants (see Table 6). More precisely, participants identified as both high Machs and high economic opportunists, had a

Table 6. Frequencies of positive, negative, neutral or absence of sign attached by the participants to their own associations within the sub-samples of “extremely cooperative participants” and “extremely defecting participants”

	Positive		Negative		Neutral		Absence	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Extremely cooperative participants								
Sincerity	238	79.30	35	11.70	24	8.00	3	1.00
Revenge	46	12.80	238	66.10	46	12.80	30	8.30
Extremely defecting participants								
Sincerity	103	68.70	16	10.70	19	12.70	12	8.00
Revenge	19	16.20	69	59.00	16	13.70	13	11.10

tendency to restrict positive evaluations in favour of neutral evaluations as well as in favour of omissions of evaluations, compared to participants identified as both low Machs and low economic opportunists, $\chi^2(3, N = 450) = 18.569, p < .001$. Differentiations of the evaluations of associations to the stimulus word “revenge” within the two examined groups were not found to be of statistical significance, $\chi^2(3, N = 477) = 2.286, p = .515$, even though according to the recorded frequencies, the “extremely cooperative ones” expressed positive evaluations for revenge less often and negative evaluations more often than the “extremely defecting ones”. The absence of statistically significant differences perhaps is due to the fact that low Machs (cooperators) and high economic opportunists (defectors) both tended to omit evaluations of their own associations.

DISCUSSION

This study aimed to investigate the representational and attitudinal differences between cooperators and defectors as regards relevant notions of cooperation theory, using two scales that measure strategies of manipulation of information.

“Sincerity” is, in theory, a notion that differentiates the behaviours of cooperators and defectors of the two strategies examined for two reasons: (a) because “sincerity” can be considered as a cooperative strategy, mainly founded on communication and information -exchange processes, such as telling the truth, sharing information, avoid lying, misinforming or hiding information; and (b) because “sincerity”, with respect to the strategies of manipulation of information examined, not only is a fundamental characteristic of cooperators but, moreover, is an element of their vulnerability since defectors can exploit it. One theoretically interesting difference in the structural approach of representations of sincerity observed was that for high Machs, the second

element of the central core of the representation referred to the close social environment (family, friends), thus suggesting that restricting sincerity to a close social environment is a structuring element which confers meaning to those defectors' representation of sincerity. For low Machs this element was also frequent but it was not included in the central core since it had a weaker rank of appearance. Limiting sincerity to the close environments also conveys a lack of trust for others, which characterizes defectors (Gurtman, 1992; Sakalaki, Richardson, et al., 2007).

It has already been mentioned that propensity to take revenge, seems to be one of the most important interpersonal problems of high Machiavellian scorers (Gurtman, 1992). The variable of Machiavellianism differentiated the representations of revenge in that high Mach's fundamental element of the representation's central core (that is, "ways of getting revenge and/or negative implications of revenge") referred to aggressive acts and disastrous consequences of revenge, whereas for low Machs the fundamental element referred to human passions and psychological problems. In other words, understanding and explaining revenge through psychological categories primes for low Machs and constitutes the element which organizes the representation and gives sense to it. It is noteworthy that moral judgments and condemnation of revenge were included in the central core of the representations of low Machs, thus suggesting a rejecting attitude towards revenge. From this point of view, Machiavellianism seems to be a more discriminating construct than economic opportunism.

The evaluative and attitudinal dimension embedded in the examined social representations, operationalised by participants' evaluations of their own associations, is the one that differentiated more clearly cooperators and defectors of both scales, providing insight concerning the factors which differentiate cooperators and defectors. Cooperators had a greater propensity either to associate negative evaluations or to omit evaluations to their own responses concerning the stimulus word "revenge", which is a behaviour that they tend to avoid and disapprove. On the other hand, they more often associated a positive value to their responses to the stimulus word "sincerity", that is, a behaviour cooperators tend to adopt more frequently than defectors. More precisely, high Machs associated more often a positive value to "revenge" and a neutral value to "sincerity", while high opportunists more often omitted evaluations for both "revenge" and "sincerity", something that suggests a reservation to express their attitudes.

Conclusively, cooperators (such as low Machiavellians or low economic opportunists) and defectors (such as high Machiavellians or high economic opportunists) seem to share quite similar representations about notions in regard to which it can be argued that their strategies and propensity to act must differ. It must be noted that the examined representations seem to be quite similar even between

rather extreme cases of cooperators and defectors (such as those in Analysis 2) who are simultaneously identified as both low Machiavellians and low economic opportunists or simultaneously identified as high Machiavellians and high economic opportunists, respectively. Such finding seems to strengthen the thesis that individuals with either a cooperative or a defecting propensity seem to share a cognitive consensus as regards the examined notions. The meaning of the two stimuli words seems not to be strongly differentiated within distinct groups of specific behaviour propensities.

Consistency between propensity to defect – as suggested by the responses to the questionnaires on the one hand, and representations of cooperators and defectors on the other hand – is indirectly suggested. This is evidenced mainly through the differences regarding the evaluative, attitudinal dimension that these two categories of participants associate to the elements composing their representations; also, by the more central status of moral judgments rejecting revenge that were observed in the social representations of low Machs, that is, of cooperators.

Future studies should further investigate the role of attitudes and moral judgments in the choice of cooperative or defecting strategies and behaviours. While, according to the findings of this study, the cognitive dimension of lay-thinking seems to be beyond individual differences regarding cooperativeness, the normative, attitudinal dimension including values, norms, attitudes, and moral judgments seem to be more critical for discriminating cooperators from defectors. Future research should also study, in a larger spectrum of cultures, if attitudes, values and social norms applying to abstract concepts are more consistent with strategy choices than social representations of these concepts in order to see if these limited, preliminary findings can be generalized.

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