

## **Fear or Greed? Duty or Solidarity? Motivations and Stages of Moral Reasoning: Experimental Evidences from Public-Goods Provision Dilemmas**

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### **Abstract**

Judging from the perspective of standard game theory, empirical research has uncovered a rich array of “anomalies” that systematically occur in situations that were once thought to have properties leading to clear predictions. This is particularly the case for morally relevant conflicts of action, such as social dilemmas related to the appropriation of common-pool resources and provision of public-goods. Explanation of such anomalies has focused on the effects of structural variables and contexts on people’s decisions. However, the present study suggest that classifications or typologies based on such descriptors of the action situation are not enough to explain and predict individuals’ decisions in social dilemmas because sociocognitive and moral reasoning has its own stages of development and cannot be deduced from the objective incentive structure or context of action alone. In order to examine this proposition we test experimentally the explanatory power of a selected developmental model designed to rationally reconstruct the pretheoretical knowledge of competently judging subjects. Results indicate that the theoretical constructs in the chosen model provide reliable source of information to explain and predict diverse behavioral responses to similar incentive structures in a public-goods provision dilemmas under variable institutional conditions.

**Keywords:** public-goods; experimental economics; psychosocial development

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## 1. Introduction

As the increasing urbanization and growing demand for agricultural commodities impart major changes on the landscape of global agricultural systems, the rising pressure upon the open-access, common-pool resources and ecological environments of the globe reinforces the importance of understanding better the factors underlying the provision of public-goods, including cooperative rules and other institutional arrangements organized locally to support the co-governance of complex socio-ecological systems.

The explanation and prediction of behavior in collective-action settings definitely call for an extension of the toolkit of conventional economics towards the principles, techniques and approaches from other disciplines. Even though the standard assumptions respecting the cognitive capacities, valuations, and intentional states of the rational actors in mainstream economics are relatively unproblematic to predict average behavior in market settings, they have potentially seriously misleading implications when applied to address conflicts of action wherein the individual and the collective interests collide (cf. e.g. Ostrom, 1990, 2005; Gintis, 2000; Bowles and Gintis, 2003; Camerer 2003).

In these circumstances, the collective puzzle is that if many or all individuals try to maximize their own outcomes, as the conventional theory presumes, the effect is that (sooner or later) everybody gets less than if they had not done so (Dawes, 1980; Messick & Brewer, 1983). Relating to public-goods provision dilemmas, while the basic problem involving the particular payoff structure clearly comes from the public nature of the good<sup>1</sup> and the way in which two or more persons are interdependent for obtaining outcomes, the patently *moral* component drawn in this sort of choice situation renders simply inadequate to assume aprioristically that all preferences are self-regarding, and then tacitly identify rational action with action oriented toward maximizing the private

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<sup>1</sup> The public nature of the good implies it is non-rivalrous and non-excludable.

benefit, regardless of the broader consequences and effects on the well-being of others.

However, as the common idea that “value judgments” or “moral questions” have no cognitive content makes the explanation of the rationality of moral action rather baffling, research on social dilemmas has been focusing on the effects of an ever-increasing number of potentially important variables describing the structural characteristics of both the outcomes (high or low, certain or probable, wide or narrow spatial and temporal distributions, et cetera) and of the group of people involved in the situation (large or small group, with or without communication, with or without a leader or prior organization experience, et cetera), in addition to the effects associated to the specific context or content of the decisions (market investments, agricultural cooperation, water management, costal fishery, ecological issues, et cetera) (e.g. Agrawal, 2001, Ostrom, 2007; Poppe, 2005; Kopelman, Weber, & Messick, 2002; Kollock, 1998; Komorita & Parks, 1995; Lepyard, 1995; Van Lange, Liebrand, Messick, & Wilke, 1992).

To address social dilemmas without falling into the trap of creating a messy complexity, Ostrom (2005) calls attention to the theoretical challenge of developing an appropriate family of assumptions to make about the *intrinsic values* individuals place on actions and outcomes—particularly outcomes obtained by others. She then argues that “social scientists have to match their initial assumptions about the orientations of participants to the situation they are trying to understand and explain.” But, again, the real challenge drawn in social dilemmas is that individuals often reach *diverse* valuations or utility judgments in the face of *similar* incentive structures. Thus, at least as far as intrinsic values are concerned, there is no uncomplicated method for matching the assumptions about the orientations of the participants to the structural and contextual descriptors of the action situation.

As suggested, much of the confusion emerges, in our view, from the tacit assumption that individuals’ intrinsic values and normative orientations are in essence

noncognitive occasions and fall therefore beyond the range of rational justification. According to Heath (2001), this view is what underlies “the widespread tendency among social theorists to assume that instrumental action is the only form of rational action, and that norm-governed action must have some kind of nonrational source, such as conditioning, socialization, or habit” (ibid, p. 2). Heath further points to how the presumption of non-rationality of value judgments makes it tempting to abandon the action frame of reference and supply purely functionalist explanations for the coherence of norm systems and the adaptability of norm-governed action. It seems to us that this sort of functionalism is what lies similarly behind the suggestion that the adequate assumptions about intrinsic values can be deduced from a detailed analysis of the circumstances of action.

By combining the assessment to the participants’ psychosocial profiles, as described by Clare W. Graves’s (1970) emergent-cyclical model of *adult* personality systems development, with Poppe’s (2005) strategy for revealing participants’ motivations in a step-level give some dilemma, we present in this study experimental results in support to the proposition that normative orientations and value-based behavior systems have their own internal drives or laws of transformation toward greater complexity and integration, and are not simply imported from the external world. Running complementarily in the opposite direction to Ostrom’s methodological statement, quoted above, a central tenet in developmental psychology is that, in order to produce the expected results, the incentive structure should be congruent to or match the characteristics of each *stage* of interior development due to unique motivational needs, aims, and means that differ within each stage. The substantive implication comes from an increasing consensus of scholars familiar with the findings in this field that human interior development *tends* toward heightened autonomy; declining egocentrism; growing inclusiveness and care for others; greater mutual understanding through communication; expanded cooperation; and strengthened moral capacity to honor normative commitment, without the need of external enforcement or

punishment. Our results support this view as cooperative dispositions and actual decision are associated with higher stages of development, as in Graves's scheme.

Clearly, as Habermas (1990) notices, empirical research will not advance our understanding of how moral stages may actually satisfy the conditions of a stage model conceived in terms of a logic of development "until we have an interesting and sufficient precise proposal for a solution of the problem in the form of a hypothetical reconstruction" (p. 129). However, a hypothetical reconstruction of this type is at odds with the traditional project of analytic epistemology, including both the received (correspondence) theory of truth and the received (foundationalist) view of justification, as it requires challenging empiricist objections to cognitivist approaches in moral theory. In Habermas's words, "Any developmental theory of the capacity for moral judgments must presuppose [the] possibility of distinguishing between right and wrong moral judgments" (1990 p. 120), and "Only cognitivist basic assumptions can do justice to the phenomena and the experience of a posttraditional morality that has detached itself from the religious and metaphysical contexts from which it arose" (1993, p. 39).

A brief account on the epistemological matter drawn in our proposal for the integration of the stage developmental point of view into the Institutional Analysis and Development (IAD) framework can be found in Meyer (2009). The interested reader may wish consult Habermas (1987, chapter five, and 1990, chapter four; see also Habermas, 1993, chapter three, and Wilber, 2000 and 2006, excerpt D). In what follows we first outline Graves's model and then the experimental strategy. The results are presented and discussed in the sequence. The final session points toward the policy implications.

## **2. Cooperate or free ride? The *biopsychosocial* waves of agency and communion**

Rather than purely a psychological study, the developmental theory we examine here (Graves, 1970 and 2005) postulates that the *biopsychosocial* development of human beings arises from the interaction of a double-helix complex of

two sets of determining forces: the environmental social determinants, and the neuropsychological equipment of the organism for living. Out of about a decade of careful empirical research, Graves conceptualized eight emergent stages or waves of interior growth which provide a description of states of biopsychosocial equilibrium, comprising a perception of the environment, a reciprocal state of neurochemical balance, reflected in a social construction that then influences those mental states of equilibrium, as part of the environment perceived.

Though each behavioral system associated to those stages must be viewed with a different premise, out of their own specific aims and means, Graves's theory puts forward that people tend to oscillate back and forth between two fundamental stances, much like the relative position of a pendulum in its arc between "me" (agency) and "we" (communion) orientations (Cowan & Todorovic, 2005). Along with this cyclical turn, human development is described as "an unfolding, ever-emergent process marked by subordination of older behavior systems to newer, higher order systems" (Graves, 2005. p. 29), so that new capacities and broader perspectives are added to the previous ones. As a result, the developmental process brings forth marked qualitative changes showing *decreasing* egocentrism and *increasing* behavioral freedom.

Due to space restrictions, we limit the characterization of Graves's theoretical constructs to their corresponding styles of thinking and main themes, as presented in Table 1. The feature showing decreasing egocentrism is noticeable by comparing the themes corresponding to the 3<sup>rd</sup>, 5<sup>th</sup>, and 7<sup>th</sup> stages. The whole scheme implies a widening of the moral embrace, i.e., of those who are considered worth of moral concern.

Clearly, we suggest that these patterns have important implications for the institutional analysis of social dilemmas. Actually, a central tenet in developmental psychology is that, in order to produce the expected results, the incentive structure should be tuned to the characteristics of each psychosocial centralization stage due to

unique motivational needs that differ within each stage. Besides, the qualitative changes also suggest that coercive institutions might well be substituted for further interior transformation.

Table 1.

Cyclical aspect, way of thinking and themes of the selected Gravesian stages or waves of interior development

Stage or wave	Cyclical aspect	Thinking	Basic theme
8 <sup>th</sup>	Sacrifice-self (communion)	Holistic	<i>Adjust to the realities of one's existence and accept the existential dichotomies as they are and go on living.</i>
7 <sup>th</sup>	Express-self (agency)	Ecological	<i>Express self for what self desires, but never at the expenses of others and in a manner that all life, not just my life, will profit.</i>
6 <sup>th</sup>	Sacrifice-self (communion)	Consensus	<i>Sacrifice now in order for all to get now.</i>
5 <sup>th</sup>	Express-self (agency)	Strategic	<i>Express self for what self desires, but in a fashion calculated not to bring down the wrath of others.</i>
4 <sup>th</sup>	Sacrifice-self (communion)	Authority	<i>Sacrifice self now to receive reward later.</i>
3 <sup>rd</sup>	Express-self (agency)	Egocentric	<i>Express self, to hell with others and the consequences, lest one suffer the torment of unbearable shame.</i>
2 <sup>nd</sup>	Sacrifice-self (communion)	Animistic	<i>Sacrifice self to the way of your elders.</i>
1 <sup>st</sup>	Express-self (agency)	Instinctive	<i>Express self as just another animal according to the dictates of one's psychological needs and the environmental possibilities.</i>

Source: Author's configuration based on Graves (2005) and Beck and Cowan (1996)

### 3. Method and procedures

The participants in the public-goods experiment were, for the most part, Brazilian undergraduate students from the most diverse major degrees. Prior to take part in the experiment, 322 potential participants (44% females and 56% males) filled out an authorized Portuguese translation of the Spiral Dynamics Discovery Survey. The assessment tool consists of forty multiple choice questions in the Most Like Me/Least Like Me format. It was designed by Hurlbut (1979) to reveal a person's psychosocial profile (from 2<sup>nd</sup> to 7<sup>th</sup> stage) with reference to his/her overall lifestyle and not any

compartmentalized area of life such as his/her professional occupation, family life, religious beliefs, etc..

In order to verify the cross-cultural robustness of Graves's general scheme, we carried out a *factor analysis* on the survey data. Following the experiment, we conducted a series of statistical analysis (Pearson correlations and multivariate regressions) using both the original survey data and the principal components obtained via factor analysis in order to test the explanatory power of Graves's constructs (Table 1) in relation to participants' behavior and motivations in the experimental conditions.

### **3.1. Experiment summary**

The experiment was a step-level give-some dilemma based on Poppe and Zwikker (1996). Enough participants had to contribute in order to obtain outcomes for all. During the experimental sections, discussion between the participants was not allowed. From a total of 172 people who answered our call, a total of 127 subjects (62 female and 65 male) actually showed up and took part in the experiment.<sup>2</sup>

The experiment consisted of nine trials. In each of the trials every participant had 0.50 reais (about US\$ 0.25) at his or her disposal. The participants were asked to decide whether they would keep the 50 cents or would contribute them to a common pool. ("I do/do not contribute"). If at least X percent of the participants contributed the 50 cents to the pool, all participants—those who had not contributed included—would receive R\$ 1.00. If a participant contributed him- or herself and not enough others contributed, s/he would lose his or her contribution. Thus, in each trial the participant could get R\$ 0.00 (s/he contributed but not enough others contributed); R\$ 0.50 (s/he did not contribute and not enough others contributed); R\$ 1.00 (s/he contributed and enough others contributed) or R\$ 1.50 (s/he did not contribute but enough others contributed).

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<sup>2</sup> There is a missing case regarding the Spiral Dynamics profile, so that we have a total of 126 cases included in the statistical tests below.

The percentage (X) of the total participants who had to contribute in order to receive the 50 cents from the pool varied. Along the sequence of the nine trials the percentages were 40%, 70%, 10%, 60%, 90%, 30%, 50%, 80% and 20% respectively. In order to reveal the motivation under participants' decisions, before every trial the participant was asked to indicate which percentage of all participants s/he expected to contribute ("I expect that \_\_\_\_ percent of all participants contribute"). To stimulate the participants to mention accurate expectations, we settled that each of the 9 participants (one per trial) with the most accurate expectations would receive a bonus of R\$ 5.00. Thus, in every trial it was established whether the participant did expect that enough others would contribute or did not expect that enough others would contribute and whether the participant did contribute or did not contribute him- or herself.

The alternative motives underlying participants' decisions whether or not to contribute were determined by comparing participants' revealed expectations with their actual decisions in each trial. If the participant did not contribute, the motive could be either *greed* or *fear* (of losing her contribution) depending on whether the participant expected that there would be enough contributions for the provision of the public good. Similarly, if the participant did contribute, the motive could be either *solidarity* (if she expected that there would be enough contributions) or sense of *duty* (if she contributed even when disbelieving that there would be enough contributions (Figure 1). For each motive a dichotomous score reflected the presence or absence of that motive in a trial.

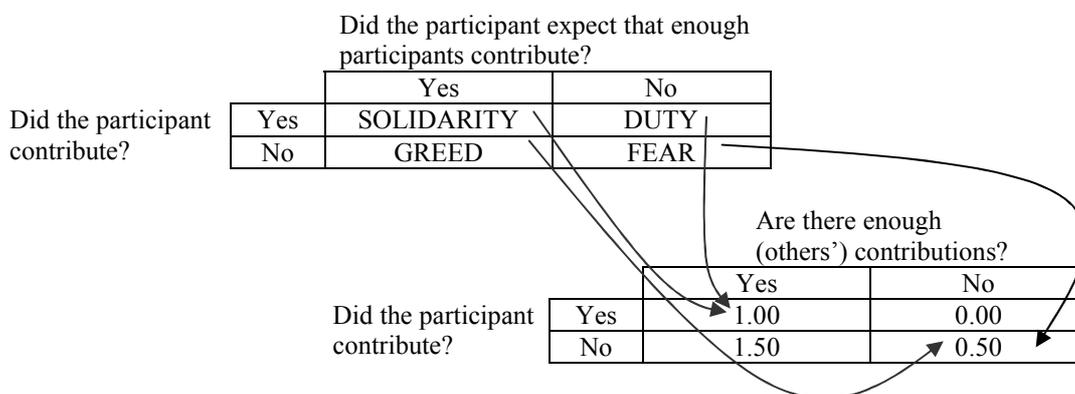


Figure 1. Public good experiment: motives and final outcomes.

### 3.2. Theoretical expectations

Regardless the level of required contribution, insofar as the incentive structure creates the provision dilemma (Figure 1) the standard game-theoretic prediction suggests that the public good will not be supplied (the dominant strategy is not to contribute). The theory makes no distinction between the alternative motives and tacitly identifies the decision of not contributing with the rational choice itself. That not only the levels of required contribution but also the context and actual content of the decision affect participants' behavior in public-goods experiments have been shown elsewhere (e.g. Poppe, 2005; Kopelman et al, 2002; Kollock, 1998; Komorita & Parks, 1995; Lepyard, 1995; Van Lange et al, 1992). Here we want to know how participants' decisions and motivations relate with the stages of psychosocial development, as described in Graves's model (Table 1), so as to evaluate the implications of the human potential for moving up that stages of interior growth on the provision of public goods.

We skip the theoretical discussion about how individuals centralized at different stages of psychosocial development are supposed to form expectations regarding the behavior of others.<sup>3</sup> About the frequency of contributions on the average of the nine trials we posit that:

**H1\_contributions:** both the 3<sup>rd</sup> and 5<sup>th</sup> stages of psychosocial development (Table 1) are expected to contribute less frequently, while the sacrifice-self systems (2<sup>nd</sup>, 4<sup>th</sup>, and 6<sup>th</sup> stages) plus the 7<sup>th</sup> stage are expected to contribute more frequently.

As for the motivations underlying the alternative decisions, we posit that under the decisions to cooperate we should find that:

**H2.1\_motivations to contribute:** the 2<sup>nd</sup>, 4<sup>th</sup>, and 6<sup>th</sup> stages cooperate out of both *solidarity* and sense of *duty*. The 5<sup>th</sup> and 7<sup>th</sup> stages cooperate out of solidarity but not sense of duty; while the 3<sup>rd</sup> stage is expected not to cooperate.

As to the decision of not contributing, we posit that:

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<sup>3</sup> This issue involves the combination of the psychosocial characteristic of each stage and the way as the individuals centralized at different stages see others as been mostly alike or unlike to him- or herself.

**H2.2\_motivations to not to contribute:** when individuals centralized at the 2nd, the 4th, the 6th or the 7th stages decide not to cooperate, the underlining motive should be *fear* but not *greed*. The motives underlying the refusal to cooperate on the part of individuals centralized at either the 3rd or 5th stages of psychosocial development can be are both fear and greed.

## 4. Results

### 4.1. Factor analysis suggests the Graves's scheme in cross-culturally robust

Differently from what terms like “stages” or “levels” might lead to believe, psychosocial development is, overall, as complex wave-like phenomenon, which much overlap and interwaving, resulting in a meshwork or dynamic spiral of consciousness unfolding (Beck & Cowan, 1996; Wilber, 2001). As such, the separate stages or levels of development are just theoretical constructs that impart *nodal* positions or “centers of psychosocial gravity;” not the *total* systemic manifestations of concrete individuals. Notwithstanding, these nodal positions are posited to follow a same stepwise, invariant sequence, so that that interwaving of systems does not occur at random, but must, instead, put across certain logic of mutual evaluative perspectives (see Table 1).

Accordingly, the component matrix resulting from the factor analysis must convey a nonarbitrary pattern of correlations between the variables in the survey data in order to generate theoretically meaningful components. In the present case, the analysis of component matrix (Table 2) points toward three plainly meaningful principal components expressing nodal positions at (i) the *egocentric*, 3<sup>rd</sup> wave (Factor 1), (ii) *absolutistic*, 4<sup>th</sup> wave (Factor 2), and (iii) *sociocentric*, 6<sup>th</sup> wave (Factor 3).

Taken together, the three factors explain about 70% of the total variance in the sample (Factor 1 = 23.44%; Factor 2 = 22.15%; and Factor 3 = 24.56%, after Varimax rotation<sup>4</sup>). We claim that the theoretical meaningfulness of principal components configure an indication of the cross-cultural robustness of Graves's constructs, since

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<sup>4</sup> It should be mentioned that when the Varimax rotation is done the *maximum variance property* of the original components is destroyed. The rotation essentially reallocates the factor loadings and, thus, the first rotated factor will no longer *necessarily* account for the maximum amount of variance.

we assessed his construct in a sample of Brazilian participants. The robustness of Graves's model is supported by associations between the factors scores and the behavioral observations produced in the laboratory CPR appropriation dilemma.

Table 2  
Factor Analysis: Rotated Component Matrix<sup>a</sup>

Variable	Rescaled communalities	Rescaled Component		
		1	2	3
2 <sup>nd</sup> _most	.466	<b>.369</b>	<b>.476</b>	<b>.335</b>
2 <sup>nd</sup> _least	.592	.002	<b>-.464</b>	<b>-.614</b>
3 <sup>rd</sup> _most	.538	<b>.722</b>	.072	-.109
3 <sup>rd</sup> _least	.851	<b>-.897</b>	.124	.176
4 <sup>th</sup> _most	.733	<b>-.346</b>	<b>.783</b>	-.007
4 <sup>th</sup> _least	.733	<b>.727</b>	<b>-.453</b>	.020
5 <sup>th</sup> _most	.696	.092	-.052	<b>-.827</b>
5 <sup>th</sup> _least	.532	-.069	-.246	<b>.683</b>
6 <sup>th</sup> _most	.788	<b>-.423</b>	-.069	<b>.774</b>
6 <sup>th</sup> _least	.518	<b>.569</b>	.256	<b>-.359</b>
7 <sup>th</sup> _most	.766	.109	<b>-.850</b>	-.176
7 <sup>th</sup> _least	.521	.215	<b>.682</b>	.104

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The correlations detached in bold are all statistically significant

a. Rotation converged in 7 interactions.

Source: Research results

#### 4.2. Different conditions, different decisions and motives: institutions clearly matter

Table 3 presents the distribution of expectations, actual decisions and motives according the three grouped levels of necessary contribution. The results show that, considering all trials, 51.4% of the participants expected that enough (other) participants would contribute. The actual percentage of contributors amounted to only 26.0%. Given this, the public good was provided only up to the 40% contribution level. In the nine trials, 28.6% of the participants showed *greed*, 45.1% *fear*, 22.8% *solidarity* and 3.4% a sense of *duty*.

Following Poppe (2005), we performed a series of ANOVA with contribution level as within-subject factor. If an ANOVA showed a significant effect of contribution

level, it was followed by a linear trend analysis. It was found that the contribution level had significant effect both on expectations and decisions whether to contribute or not, as well as on the motives under the participants' decisions. The results in Table 4 show that the higher the percentage of participants that had to contribute in order the public good could be provided the less participants expected enough participants to contribute and the less they contributed themselves. Therefore, the more contributions were required the more *fear* and sense of *duty* and the less *greed* and *solidarity* the participants showed. We now want to know whether the stage of psychosocial development have something to do with participants' decisions and motivations.

Table 3

Percentages of participants who did (not) expect enough others to contribute, did (not) contribute themselves and showed fear, greed, solidarity and a sense of duty

		Participant expected that enough participants contributed					
		No		Yes		Both	
Participant did not contribute		<b><i>Fear</i></b>		<b><i>Greed</i></b>			
	Low	12,6	Low	57,0	Low	69,6	
	Medium	40,9	Medium	23,4	Médium	64,3	
	High	81,9	High	5,5	High	87,4	
	All	45,1	All	28,6	All	73,8	
Participant contributed		<b><i>Duty</i></b>		<b><i>Solidarity</i></b>			
	Low	1,0	Low	29,4	Low	30,4	
	Medium	3,4	Medium	32,3	Médium	35,7	
	High	5,8	High	6,8	High	12,6	
	All	3,4	All	22,8	All	26,2	
Both	Low	13,6	Low	86,4			
	Medium	44,4	Medium	55,6			
	High	87,7	High	12,3			
	All	48,6	All	51,4			

*Note:* Low, Medium, High: trials in which a low (10–30), medium (40–60) or high (70–90) percentage of the participants had to contribute to obtain R\$1.00. All: all trials.

*Source:* Research results.

Table 4  
Linear trend: independent variable is contribution level (10-90)

Dependent variable	Model summary		df1	df2	Parameter estimates			Sig.
	R Square	F			Constant	B	Std. Beta	
Expectation	0,390	729,149	1	1141	1,119	-0,012	-0,624	0,000
Contribution	0,027	31,553	1	1141	0,402	-0,003	-0,164	0,000
Fear	0,343	595,425	1	1141	-0,113	0,011	0,586	0,000
Greed	0,235	351,131	1	1141	0,711	-0,008	-0,485	0,000
Duty	0,013	14,985	1	1141	-0,006	0,001	0,114	0,000
Solidarity	0,049	58,688	1	1141	0,408	-0,004	-0,221	0,000

Source: Research results.

### 4.3. Same conditions, different decisions and motives: interior growth matters as well

Beginning with the decisions whether or not to contribute for the common-pool, results from multivariate regression analysis using the three principal components as predictors (Table 5) suggest that the provision of the public good is supported mainly by the individuals scoring higher in the *sociocentric* stage or wave of psychosocial development (Factor 3). This result concurs with the expectations respecting the 6<sup>th</sup> stage, and it is also in agreement with the expectations related to the 2<sup>nd</sup> and 5<sup>th</sup> stages (**H1\_contributions**), due to the internal relationships between the themes associated to these stages of psychosocial development in the Factor 3 (cf. Table 2).

Table 5  
Linear multivariate regression dependent variable: participant contributed for the common pool (total of the nine trails)

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	,263	,020		13,225	,000
	Egocentric	-,029	,022	-,119	-1,349	,180
	Absolutistic	,008	,021	,033	,378	,706
	Sociocentric	,048	,020	,213	2,405	,018

As for the motivations underlying the decisions ensuing from individuals centralized at different stages of psychosocial development, the results shown in the Tables 6 and 7 are likewise in wide agreement with the theoretical expectations. There one sees that the motive *greed* (for not contributing) correlates positively with the acceptance of the themes associated to both the 3<sup>rd</sup> and the 5<sup>th</sup> stages (and negatively with the rejection of those themes), as suggested in **H2.2**. These relationships appear also as *negative* correlation between the motive *greed* and individuals' scores in the Factor 3 (sociocentrism). Still regarding the motives for not to contribute, the significant negative correlation involving the motive *fear* and the acceptance of the 6<sup>th</sup> level's theme is noteworthy and logical, even if not expected.

Table 6  
Pearson bivariate correlations: motives and payoff (n = 126)

Survey variables and Factors	Motive of decision				Total payoff
	"Fear"	"Greed"	"Duty"	"Solidarity"	
2 <sup>nd</sup> most	-0.009	-0.058	<b>0.125*</b>	0.012	-0.047
2 <sup>nd</sup> least	-0.079	<b>0.209***</b>	-0.051	-0.078	0.073
3 <sup>rd</sup> most	-0.065	<b>0.139*</b>	0.063	-0.078	0.023
3 <sup>rd</sup> least	0.002	<b>-0.142*</b>	-0.027	<b>0.139*</b>	<b>-0.119*</b>
4 <sup>th</sup> most	0.094	-0.111	-0.015	-0.001	-0.011
4 <sup>th</sup> least	0.065	0.103	-0.062	<b>-0.144*</b>	<b>0.169**</b>
5 <sup>th</sup> most	0.011	<b>0.176**</b>	<b>-0.171**</b>	-0.102	<b>0.163**</b>
5 <sup>th</sup> least	-0.030	<b>-0.197**</b>	<b>0.218***</b>	<b>0.124*</b>	<b>-0.192**</b>
6 <sup>th</sup> most	<b>-0.151**</b>	-0.105	<b>0.169**</b>	<b>0.202**</b>	<b>-0.230***</b>
6 <sup>th</sup> least	-0.041	0.087	-0.023	-0.022	0.035
7 <sup>th</sup> most	0.112	0.006	-0.097	-0.095	<b>0.122*</b>
7 <sup>th</sup> least	0.111	-0.053	-0.042	-0.063	0.076
Egocentric	0.027	0.094	0.034	<b>-0.132*</b>	0.114
Absolutistic	0.030	-0.060	0.023	0.010	-0.025
Sociocentric	-0.062	<b>-0.173**</b>	<b>0.205**</b>	<b>0.145*</b>	<b>-0.194**</b>

\*\*\* Correlation is significant at the 0.01 level (1-tailed).

\*\* Correlation is significant at the 0.05 level (1-tailed).

\* Correlation is significant at the 0.10 level (1-tailed).

Source: Research results

Relating to the decisions to contribute, *solidarity* and *duty* correlates positively with the acceptance of the theme of the 6<sup>th</sup> stage (as in **H2.1**), and thus with higher scores in the Factor 3. In contrast, the motive *duty* correlates negatively with the

acceptance of the theme of the 5<sup>th</sup> level (and positively with its rejection), while the motive *solidarity* correlates negatively with the scores in egocentrism (Factor 1). The positive correlation between the motive *duty* and the *rejection* of the 3<sup>rd</sup> level's theme confirms this expected (**H2.1**) relationship, whereas the negative correlation with the rejection of the 4<sup>th</sup> level's theme concurs with the hypothesis **H2.1** as well.

No statistically significant coefficients were found in multiple regressions or multinomial logistic models where the three principal components figured as predictors of the motives. Yet, by using the frequencies motives as predictors of the factor scores we were able to confirm the relationship between the motives and the sociocentric stance (including the acceptance of the 6<sup>th</sup> and the rejection of the 5<sup>th</sup> levels' themes). These results are presented in Table 7, where each model excludes one motive due to the existence of multicollinearity. The Model 1 confirms that both motives under the decision to contribute for the provision of the public good are positively associated with the factor scores in sociocentrism, while Model 2 shows that both motives under the decision of not contributing are negatively associated with the factor scores in sociocentrism.

Table 7  
Linear multivariate regression dependent variable: sociocentrism (all trials)

<i>Motive</i>		<i>Sociocentrism (Factor 3)</i>	
		Model 1	Model 2
<b>Solidarity</b>	Std. Beta	<b>0,206</b>	-0,369
	sig.	0,065	0,130
<b>Duty</b>	Std. Beta	<b>0,243</b>	---
	sig.	0,014	---
<b>Fear</b>	Std. Beta	0,167	<b>-0,505</b>
	sig.	0,169	0,041
<b>Greed</b>	Std. Beta	---	<b>-0,529</b>
	sig.	---	0,014
<b>(Constant)</b>	Std. Beta	-0,648	2,298
	sig.	0,075	0,034
F		<b>3,036</b>	<b>3,036</b>
sig.		0,032	0,032
R <sup>2</sup>		0,069	0,069

Source: Research results

## 5. Conclusions and implications

In a sense, the fact the different individuals respond differently to similar incentive structures may seem rather unsurprising. The implications resulting from the developmental point of view requires, first, the recognition that individuals' utility judgments, particularly regarding actions and outcomes that affect the well-being of others, proceed from something deeper than the contingent features describing the action situation. This means, among other things, that the unfolding of different behavioral systems presents its own stages of growth and development, so that behavior cannot be inferred from the external context alone. In addition, researchers familiar with the findings in this field are reaching a growing consensus that interior development is a process involving, for the most part, a continuing decline in egocentrism, and increasing ability of taking other people, places, and things into account when making decisions. Insofar as this critical trait is present in Graves's model, our results provided some evidence also in this regards.

Acknowledged, further research is needed in order to produce additional evidences of this feature. However, the implication of rather clear, as is suggests that the prime directive for institutional analysis and development involving social dilemmas should possibly be to promote the human movement up the levels of human existence.

## References

- Agrawal, A. (2001). Common Property Institutions and Sustainable Governance of Resources. *World Development*, v. 29, p. 1649-1672
- Beck, E.D.; Cowan, C.C. (1996). *Spiral Dynamics. Mastering Values, Leadership and Change. Exploring the New Science of Memetics*. London : Blackwell Publishers.
- Bowles, S; Gintis, H. (2003). *Prosocial Emotions*. Working Paper, Santa Fe Institute.
- Camerer, C. F. (2003). *Behavioral Game Theory: Experiments in Strategic Interaction*. Princeton, NJ: Princeton University Press.
- Cowan, C.; Todorovic, N.( 2005). *Spiral Dynamics I: Certification*, NVCC, Santa Barbara.
- Dawes, R. M. (1980). Social dilemmas. *Annual Review of Psychology*, 31, 169–193.
- Fehr, E., Fischbacher U., & Gächter S. (2002). Strong Reciprocity, Human Cooperation and the Enforcement of Social Norms. *Human Nature* 13, 1-25.
- Gintis, H. (2000). Beyond Homo economicus: evidence from experimental economics. *Ecological Economics*, 35(special issue), 311-322.

- Graves, C.W. (1970). Levels of existence: an open system theory of values. *Journal of Humanistic Psychology*, v. 10, n. 2, pp. 131-155.
- \_\_\_\_\_ (2005). *The Never Ending Quest: A Treatise on an Emergent Cyclical Conception of Adult Behavioral Systems and Their Development*. Edited and compiled by Christopher C. Cowan and Natasha Todorovic. Santa Barbara, CA: ECLET Publishing.
- Habermas, J. (1987) *The theory of communicative action: the critique of functionalist reason*. Boston, MA: Beacon Press. v. 2.
- \_\_\_\_\_ (1990). *Moral consciousness and communicative action*. Cambridge, MA: MIT Press.
- \_\_\_\_\_ (1993). *Justification and Application: Remarks on Discourse Ethics*; translated by Ciaran Cronin. MIT Press, Cambridge, Massachusetts, and London, England.
- Hurlbut, M. A. 1979. *Clare Graves's Levels of Psychological Existence: A Test Design*. North Texas State University, Denton, Texas. PhD dissertation.
- Kollock, P. (1998). Social dilemmas: The anatomy of cooperation. *Annual Review of Sociology*, 24, 183–214.
- Komorita, S. S., & Parks, C. D. (1995). Interpersonal relations: Mixed motive interaction. *Annual Review of Psychology*, 46, 183–207.
- Kopelman, S., Weber, J. M., & Messick, D. M. (2002). Factors influencing cooperation in commons dilemmas: A review of experimental psychological research. In E. Ostrom, T. Dietz, N. Dolsak, P. C. Stern, S. Stonich, & E. U. Weber (Eds.), *The drama of the commons* (pp. 113–156). Washington, DC: National Academy Press
- Lepyard, J. O. (1995). Public goods: A survey of experimental research. In J. H. Kagel & A. E. Roth (Eds.), *Handbook of experimental economics* (pp. 111–194). Princeton, NJ: Princeton University Press.
- Messick, D. M., & Brewer, M. B. (1983). Solving social dilemmas: A review. In L. Weeler & P. Shaver (Eds.), *Review of personality and social psychology* (Vol. 4, pp. 11–44). Beverly Hills, CA: Sage.
- Meyer, L.F.F. (2009) Cognition and Norms: Toward a Developmental Theory Linking Trust, Reciprocity, and Willingness to Cooperate. Working paper at the Fourth Workshop on the Workshop in Political Theory and Policy Analysis (WOW4). Indiana University, Digital Library of the Commons.
- Ostrom, E. (1990). *Governing the commons*. Cambridge: Cambridge University Press.
- \_\_\_\_\_ (2005). *Understanding Institutional Diversity*. Princeton, NJ: Princeton University Press
- \_\_\_\_\_ (2007). A Diagnostic Approach for Going beyond Panaceas. *Proceedings of the National Academy of Sciences* (USA).
- Ostrom, E.; Gardner, R.; Walker, J.M. (1994). *Rules, games, and common-pool resources*. University of Michigan Press, Ann Arbor, MI.
- Poppe, M. (2005). The specificity of social dilemma situations. *Journal of Economic Psychology* 26, 431–441
- Poppe, M., & Zwikker, M. (1996). The effect of threshold level on greed, fear, and cooperation in step-level give-some and take-some games. In W. B. G. Liebrand & D. M. Messick (Eds.), *Frontiers in social dilemma research* (pp. 185–204). Berlin: Springer.
- Wilber, K. (2001). *A Theory of Everything*. Boston, Mass.: Shambhala.
- \_\_\_\_\_ (2006). *Excerpt D: The Look of a Feeling: The Importance of Post/Structuralism*. <http://wilber.shambhala.com/html/books/kosmos/excerptD/part1.cfm/> [assessed in May, 2009]