

Theses of doctoral (PhD) dissertation

Being in or getting into a superior role?

**Experimental study of the effect of the superior role,
Machiavellianism, and social value orientation on strategic decisions**

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The aims of the dissertation

In this dissertation we investigate the way power roles and instrumental motives influences strategic decisions. Our social interactions can show manifold patterns regarding the hierarchical level of the participants. The social psychology of power has been studied in the past few decades, and it was treated as a main structural property of social relations. The social psychological approach of power defines it as an asymmetrical control over others' outcomes (e.g., Fiske & Berdahl, 2007; Kipnis, 1976). Several studies showed that power position induces a special psychological functioning that can be described by the increased saliency of instrumentality (Guinote, 2007; Keltner, Gruenfeld & Aronson, 2003; Magee & Smith, 2013). As a result, the cognition as well as the social behavior of the powerholders changes and becomes goal-oriented, and consequently, powerholders tend to objectify their interactional partners (Gruenfeld, Inesi, Magee, & Galinsky, 2008; Kipnis, 1976). These effects are also present even if power is activated experimentally (e.g., primed for a short time in the laboratory).

The experimental social psychology of power is dominated by studies in which psychological effects of power are stemmed from power position; there is a lower number of studies that investigates the effects of power in decision-making on the level of more stable attitudes. We believe that besides the effect of power positions it is also important to explore the impact of more salient power-related attitudes on psychological functioning. In our opinion it is worthwhile to involve those traits into the scope of studies that can correlate with either (a) stable power-related attitudes or (b) a tendency to focus on instrumental aspects of situations. Therefore in our studies we found it relevant to measure individual differences in both (a) Machiavellianism and (b) social value orientation. Machiavellianism refers to the level of agreement with Machiavellian views, and social value orientation refers to a relative preference a person has in interdependent situations. The latter construct traditionally distinguishes between 2 main value orientation types, i.e., it differentiates people primarily guided by self-interests (proself value orientation) from people primarily guided by common interests (prosocial value orientation).

The research presented in this dissertation captures both situational and individual variables, such as power position, power-related attitudes and efficiency-oriented instrumental motives, in the same empirical framework, and we investigate their main and interaction effects on strategic decisions. To the best of our knowledge, the role of Machiavellianism or social value orientation in strategic decision making has been studied separately (Curry,

Chesters és Viding, 2011; Paál, 2011; Spitzer, Fischbacher, Herrnberger, Grön és Fehr, 2007; van Dijk, De Cremer és Handgraaf, 2004). In our studies we investigate the effects of these two characteristics together. Furthermore, we also try to identify a potential link between the constructs of social value orientation and Machiavellianism comparing them on the basis of interpersonal value priorities.

In our studies we involved both situational and individual factors in the investigation of the following research questions: Does a person start to follow his/her self-interests more in a superior role even if he or she is not especially motivated to do so in general? Will he or she acquire a comparable level of strategic reasoning that a person may have who is predisposed to influence outcomes in interpersonal situations? Whether people with a higher motivation to social influence change their behavior in an inferior role, and whether they take steps in this role to gain more power than those who are not really motivated to influence outcomes? The novelty of our studies can be that decisions made in the two different roles of the experimental game we applied in our studies (i.e., a modified ultimatum game) remain comparable. Hereafter we present the hypotheses, the methods and the main findings of our studies.

Hypotheses

According to our assumptions power (superior) role (*H1*), higher level of Machiavellianism (*H2*) and proself value orientation (*H3*) increase strategic reasoning, especially if power position and personal characteristics favoring strategic thinking are present at the same time (*H4*). We expect that the high power (superior) role is more preferred by people agreeing with Machiavellian views (*H5*). We also expect a correspondence between Machiavellianism and social value orientation on the basis of interpersonal values: according to our assumptions agency values are more preferred by people with higher level of Machiavellianism and proself value orientation, and communion values are more preferred by people with lower level of Machiavellianism and prosocial value orientation (*H6*). To test our hypotheses we designed and conducted 3 studies. *Table 1* gives an overview about our research questions and our studies, where “xx” and “x” marks show that a research question was investigated in our studies directly or indirectly, respectively. (Note: study numbers also shows the timeline of our studies.)

Table 1. Overview of our research questions and our studies

Research questions	Studies		
	1	2	3
The separate and simultaneous effects of the situation and personality on strategic decision making (<i>H1-H4</i>)	xx	x	
Additional study of power motives and preferences (<i>H5</i>)		xx	
The relationship of Machiavellianism and social value orientation (<i>H6</i>)	x	x	xx

Study 1: Laboratory experiment applying a modified ultimatum game

Methods and procedure of Study 1

To test our hypotheses we designed a laboratory experiment in which 98 students participated (50 female and 48 male). In the experiment we applied a modified version (Güth & Kovács, 2001) of the ultimatum game (Güth, Schmittberger, & Schwarze, 1982). In the standard ultimatum game players make decisions in one of the two roles of the game. The *proposer* (*allocator*) can decide about splitting money (1000 HUF in our case) as he/she likes, and the *recipient* can either accept or reject the proposed allocation. If the recipient takes the offer players share the money as the allocator proposed, but if the recipient turns it down (veto it), both receive nothing.

The structure of the modified ultimatum game corresponds to the structure proposed by Güth and Kovács (2001), in which the recipient also disposes of some money (300 HUF) in the beginning of the game that can be used to buy veto power. In this game three types of veto power can be distinguished: full, medium and low veto. If the recipient has *full veto* and rejects the allocator's offer neither he/she nor the allocator receives anything (i.e., they play the standard ultimatum game). If the recipient has *medium veto* and rejects the allocator's offer, both the kept and offered sums are diminished by two-third. If the recipient has *low veto* power and rejects the offer, the sums are diminished by only one-third. If the recipient does not have veto power, he/she has no choice: he/she has to take the offer from the allocator (i.e., in the case they play the standard dictator game). The recipient can get veto powers on a random draw: the experimental software (z-Tree – Fischbacher, 2007) randomly determined the type and price of veto power that was available in a respective round of the game. The

recipient had to determine in advance the amount to be paid for the different veto powers from her/his 300 HUF. The money remained after veto-buying was added to the sum offered by the allocator. Besides that, the recipient was also asked to declare her/his acceptance thresholds for every condition of veto power indicating the amount under which he/she would reject the allocator's offer. The allocator made decisions about how much money he/she would offer to the recipient, if the recipient had full, medium or low veto power, or the recipient had no veto power at all. That is, we used the strategy method and participants made their decisions in advance for each condition of veto power (full, medium, low and no veto). Participants were randomly paired in the experiment, and as two experimental periods were used, they were randomly re-paired for the second period (i.e., if somebody was allocator in the first period he/she became recipient in the second period, and vice versa). In short, we asked participants to determine the following strategies (Table 2):

Table 2. Strategies determined by the participants in the roles of the modified ultimatum game

	Allocator (1000 HUF)	Recipient (300 HUF)
full veto	offer 1	reservation price 1
medium veto	offer 2	reservation price 2
low veto	offer 3	reservation price 3
no veto	offer 4	-
full veto	-	acceptance threshold 1
medium veto	-	acceptance threshold 2
low veto	-	acceptance threshold 3

Personality-related individual differences were measured before the modified ultimatum game by frequently used scales: Machiavellianism was measured using the Mach-IV scale (Christie & Geis, 1970; Szakács, 1989), and social value orientation was measured using the Triple Dominance Measure (Van Lange, Otten, DeBruin, & Joireman, 1997). After participants made their decisions in the ultimatum game, and received information about the money they earned, they were also asked to fill in a short post-experimental questionnaire and report their representations about the decision task as well as their motives (i.e., pursuing self-interest vs. prosocial motives) regarding the game they played.

The results of Study 1

Our first hypothesis was tested with χ^2 -test, in which we used dichotomous variables showing the level of strategic reasoning based on the following criteria: allocators' offers were deemed strategic if (1) an allocator offered more to a recipient with full veto than to a recipient with no veto, *and* (2) he/she did not offer more to a recipient with medium veto than to a recipient with full veto, and he/she did not offer more to a recipient with low veto than to a recipient with medium veto. A similar "give something for the full veto, but do not evaluate veto powers reversely" criterion can be applied on the recipients' side as well. Recipients' prices for veto powers can be deemed as strategic if (1) he/she offered some money for getting the full veto, *and* (2) he/she did not bid more for getting the medium than getting the full veto, and he/she did not bid more for getting the low than getting the medium veto. In general, decisions made in the allocator role did not correspond to the logic of the game considerably more than decisions made in the recipient role. However, results detailed later give support for our *H1* hypothesis, in which we expected higher level of strategic thinking in the allocator role.

The *H2*, *H3* and *H4* hypotheses were tested with a mixed design ANOVA, where allocators' offers, recipients' prices and acceptance thresholds for the different levels of veto powers served as within-subjects variables, and participants' gender, their individual level of Machiavellianism, their social value orientation as well as the order of rounds in which the allocator or recipient decisions were made served as between-subjects variables. Our findings showed that the level of recipients' veto power significantly influenced allocators' offers: increasing veto power also increased offers ($F_{\text{VETO}}(2.57, 241.90) = 25.36, p < .001$). This main effect was qualified by a significant interaction between veto power and Machiavellianism ($F_{\text{VETO} \times \text{MACH}}(2.57, 241.90) = 8.02, p < .001$). Individuals high in Machiavellianism (high Machs) were cautious in their decision making, and compared to low Machs, they offered more if the recipient had full, medium or low veto power; however, they dramatically lowered their offer if the recipient lacked veto power. It seems that high Machs were guided by strategic fairness: they were cautious if their partners had a possibility for influence the outcomes, but they lowered their offers if their partners totally lacked this influencing capacity. *Figure 1* illustrates high Machs' strategic use of fairness. The figure also illustrates that the offers of low Machs also considerably decreased with lower levels of veto power, thus we can say that in general, participants tend to think and decide more strategically in the allocator role. Our findings on the recipients' side of the game will also give indirect support for our *H1* hypothesis.

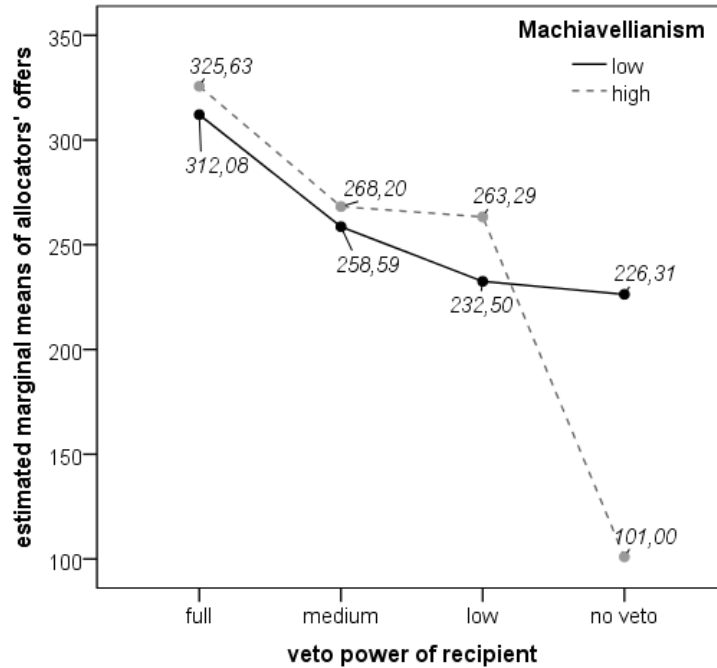


Figure 1. Allocators' offers in the function of recipients' veto power and the level of participants' Machiavellianism

Regarding social value orientation (SVO) we found that both proselfs and prosocials decreased their offers for the weakening veto powers; however, compared to proselfs, prosocials offered more for every case of veto power ($F_{SVO} (1, 76) = 14.30, p < .001$). The difference between the offers of proselfs and prosocials was the largest in the no veto condition that indicates the higher strategic considerations of proselfs. Consequently, compared to prosocials, proselfs closed the game with higher income ($Mdn_{PROSELF} = 800.00, Mdn_{PROSOCIAL} = 650.00; U = 611.50, z = -1.82, p = .07$).

On the recipients' side the main effect of veto power on prices was marginally significant: increasing veto power led to higher prices ($F_{VETO} (1.47, 141.29) = 2.83, p = .08$). This main effect was qualified by a marginally significant interaction between veto power and the individual level of Machiavellianism ($F_{VETO \times MACH} (1.47, 141.29) = 2.48, p = .10$): low Machs defined their prices independently of the level of veto power, while high Machs set higher prices for stronger veto powers. This finding indicates that, compared to low Machs, high Machs are more motivated to get influential power over outcomes. *Figure 2* illustrates that the above-mentioned main effect of veto power is primarily maintained by the price setting behavior of high Machs, since only they set prices in correspondence of the logic of the game. This is in contrast with decisions made in the allocators' role, where in a smaller or

larger extent, but most of the participants lowered their offers with the decrease of veto power.

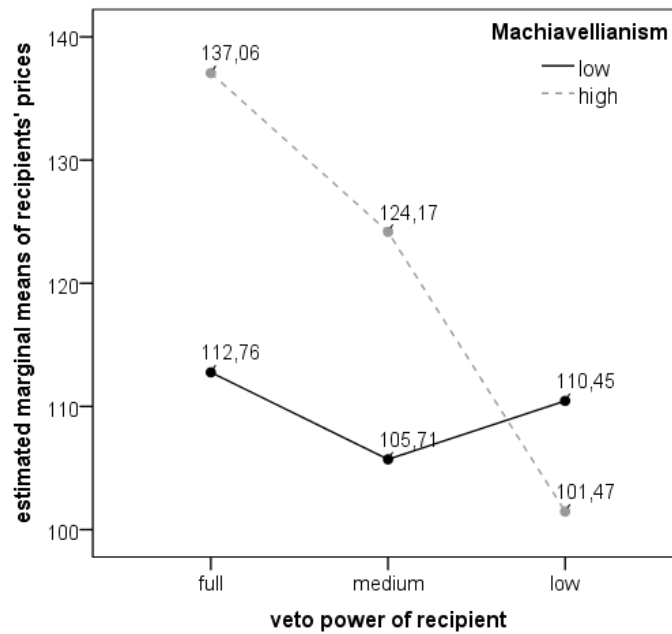


Figure 2. Prices set by recipients in the function of veto power and the level of participants' Machiavellianism

According to our findings, and probably because their above-mentioned motivation to increase their influence on outcomes, as a recipient high Machs earned less than low Machs (although the difference did not reach a marginally significant level, the means were 436.48 and 500.23 HUF, respectively, $U = 974.00$, $z = -1.50$, $p = 0.13$). However, they are more successful as allocators than low Machs, which could be the result of their low offers determined for recipients without veto power (the difference again did not reach a marginally significant level, the means were 730.84 and 666.49 HUF, respectively, $U = 971.50$, $z = -1.52$, $p = .13$).

The analysis of answers given for the post-experimental questions showed that most of the participants properly captured the main strategic features of the modified ultimatum game as well as the role of veto power had in it. Compared to low Machs, high Machs agreed with statements significantly more that referred to pursuing self-interest in the game ($t(96) = -2.69$; $p < .01$). However, low Machs agreed significantly more with items referring prosocial motivation, e.g. with the item “In games like this it is needed to treat others in a just way.” ($t(96) = 2.53$; $p = .01$).

Study 2: Questionnaire study applying a modified ultimatum game

Methods and procedure of Study 1

The sample of this study consisted of 220 young adults (107 female, 113 male). The individual level of Machiavellianism and social value orientation was measured using the same methods as in Study 1. Participants were also presented with and asked to define their strategies in the same modified ultimatum game as in the Study 1. Because of the survey method in this study participants made their decision either in the allocator or in the recipient role, and they were not financially compensated, that is they made hypothetical decisions. After defining their strategies, participants also had to ask a question whether they would choose either the allocator or the recipient role if they had a chance to play this game again and if they also had the possibility to decide it freely. This question served our aim to test our *H5* hypothesis in which we expect to detect individual differences in participants' preferences for different game roles. The same post-experimental questionnaire was used as in Study 1; however, an additional item was also applied in order to check whether the allocator role increase the subjective experience of power.

The results of Study 2

The results are similar to those in Study 1. Both allocators' and recipients' decisions were influenced by recipients' veto powers. The increase of veto power also increased allocators' offers ($F_{\text{VETO}}(2.37, 258.65) = 23.72, p < .001$) and recipients' prices for veto powers ($F_{\text{VETO}}(1.34, 140.45) = 24.56, p < .001$). Allocators' offers were also influenced by the significant main effect of Machiavellianism (the offers of low Machs were higher than the offers of high Machs for every case of veto power, $F_{\text{MACH}}(1, 109) = 5.92, p < .05$), and a marginally significant main effect of social value orientation (the offers of prosocials were higher than the offers of proselfs for every case of veto power, $F_{\text{SVO}}(1, 79) = 3.12, p = .08$). The significant main effect of veto power on recipients' prices was qualified by the marginally significant interaction of veto power and the level of Machiavellianism: prices set by high Machs decreased with the decrease of veto power in a steeper way than in the case of low Machs, $F_{\text{VETO} \times \text{MACH}}(1.34; 140.45) = 2.48, p = .09$).

Regarding the preferences of different game roles we found that the two-third part of our sample preferred the allocator role to the recipient one, and this preference was independent of the actual role in which participants made their decisions. Confirming our *H5*

hypothesis, high Machs (here: the upper quarter of the sample) showed a more pronounced preference for the allocator role, $\chi^2(1) = 2.61; p = .10$.

According to our findings, compared to the decision making in the recipient role, decision making in the allocator role significantly increased the subjective level of power (a 7-point scale was used, $Mdn_{ALLOCATORS} = 5.00$, $Mdn_{RECIPIENTS} = 3.00$, $U = 4107.00$, $z = -4.16$, $p < .001$). Similarly to the results of Study 1, compared to the high Machs, low Machs reported that they were guided by prosocial, and not by exploitative motives. High Machs as well as proselves reported a higher level of exploitative intentions (for each difference $p < .05$).

Study 3: Investigating the potential relationship between Machiavellianism and social value orientation

Methods and procedure of Study 3

The results of Study 1 and Study 2 showed that the concept of Machiavellianism and social value orientation can be related on the basis of motivations emerged in the ultimatum game. In both studies the interrelation of the two concepts was also investigated, and we observed that prosocials were more likely to belong to the group of low Machs than proselves belonged to the group of high Machs. Based on the different importance individuals attach to efficiency and instrumentality versus community, the interrelation of the two concepts can be assumed (Liebrand, Jansen, Rijken, & Suhre, 1986; Paál, 2011). Therefore, the research aim of the Study 3 was to investigate this interrelation in the domain of interpersonal value preferences. Data were collected from 445 participants (398 female and 47 male). The Agentic and Communal Values scale (Trapnell & Paulhus, 2012) was used to investigate the potential differences in value priorities. This scale measures the personal importance of agentic (e.g., competency, power, dominance etc.) and communal values (e.g., altruism, forgiveness etc.). The individual level of Machiavellianism and social value orientation was measured using the same methods as in Study 1.

The results of Study 3

The results confirmed our $H6$ hypothesis: agentic values were more preferred by high Machs and proselves, while communal values were more preferred by low Machs and people with prosocial value orientation. (It is worth to mention that as these values stem from basic human motivations of being competent and the need to belong, one should not expect the

rejection of these values. Accordingly, in our sample the means of different value types fell over the middle point of the scale. Nevertheless, the above-mentioned differences in value preferences among low and high Machs, and also among prosocials and proselfs were shown to be significant by the Mann-Whitney U-tests, for each difference $p < .01$). The relative importance of communal values to the agentic ones was also calculated, and the means of 4 groups (low Machs with prosocial value orientation, low Machs with proself value orientation, high Machs with prosocial value orientation, and high Machs with proself value orientation) were compared. This index was the highest for the prosocial low Mach-group, which was followed by the proself low Mach-group, while the prosocial and proself high Mach-groups did not really differentiate the importance of the two value types ($F(3, 102.92) = 24.92; p < .001$).

Discussion and implications

The research aims of the presented studies were twofold. First, we investigated how the superior and inferior roles in interactions as well as individual differences in instrumental motives (such as Machiavellianism and social value orientation) influence strategic decision making in a modified ultimatum game. Second, we also investigated the potential interrelation of the two mentioned personal characteristics in the field of basic human values.

The main results showed that strategic decisions were influenced by both situational (i.e., allocator or recipient role) and personal factors (i.e., the individual level of Machiavellianism and social value orientation). In the more superior role it was easier to make decisions corresponding to the logic of the modified ultimatum game, while the inferior role did not tend to enhance strategic reasoning (i.e., in this role only high Machs were strategic). Strategic decisions were also influenced by personal characteristics. The strategic use of fairness from the part of high Machs in the allocator role confirmed our expectations, in which we assumed that the more superior role increase strategic decision making, especially when personal characteristics favoring strategic thinking are present.

We would relate our results to the observations of experimental social psychology which revealed that power position makes strategic aspects more salient. Similarly, in our studies we saw that the more superior role in a modified ultimatum game led to more goal-directed solutions. At the same time, we also saw that in the inferior role only high Machs did more for getting control over the outcomes of the situation, i.e., they were more motivated to

do something against their more inferior position. Their higher motivation to influence was also underlined by their higher preference for the allocator role.

In our opinion our results have research as well as practical implications. It may be worth considering the emphasis experimental social psychology of power lays on investigating the psychological consequences of power from the direction of power position, and it is also worth considering to broaden this spectrum by taking the attitudes and dispositions more into account. Our results showed that power role enhanced strategic thinking (i.e., the chance for making more instrumental decisions was higher in the more powerful role), but we also found that in the inferior role individual differences were responsible for making efforts to get more control over the outcomes. Our results have practical implications as well. First, as we saw, decisions made in interdependent situations are guided by different motivations that are worth taking into account. Second, although power role leads to a more efficient decision making process (which can have practical implications in organizations, e.g., by supporting the rational empowering of employees in their job), but it should be also considered that there are individual differences in control needs that can inhibit both obtaining power roles and efficient decision making in those roles.

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