

The Presence of Others, Prosocial Traits, Machiavellianism

A Personality × Situation Approach

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Abstract. The presence of others has long been known to have an effect on people's decisions to engage in more helping behavior, but relatively few studies have examined the interaction between the observation of the helping act and various personality traits of the altruist person. In the present study, subjects were asked to volunteer by offering a less and a more costly charity service in public and under anonymous conditions. We found that prosocial personality traits showed relative independence of situational factors. Scores on the scale of Machiavellianism, in contrast, proved to be strongly dependent on the presence of others, but not on the cost of the offered charity act. Those obtaining high scores on this scale (high-Mach persons) disguised their selfishness and pretended altruism in the presence of others, but realized their self-interest when others were not observing their behavior. This responsiveness to the strategic distinction between the presence and absence of others is discussed in terms of reputation-gaining and competitive altruism.

Keywords: observation, helping behavior, altruism, Machiavellian intelligence

This paper provides insight into the relationship between volunteerism and personality characteristics (social cooperation, Machiavellianism) in circumstances in which participants are either being observed or not being observed by their group members. We expected that the cost of helping activities would also moderate the effect of the presence of others on the participants' decisions to offer charity service to needy people. Our main focus was on understanding the interactions among the willingness to volunteer, observation by the others, and Machiavellianism.

The Presence of Others

The effect of the presence of others has long been an object of study in social psychology (Dovidio, Piliavin, Schroeder, & Penner, 2006; Schroeder, Penner, Dovidio, & Piliavin, 1995). In general, people are concerned about others' perceptions of them, especially in prosocial decision-making situations. Being observed by others, however, may lead to a different – even opposite – behavioral output. In an emergency, a diffusion of responsibility occurs when other bystanders are present. Experiments have revealed that the more bystanders the subjects thought were present, the less likely the subjects were willing to help (Latané & Darley, 1970). They might feel personally less responsible for helping because they believe that others will intervene.

The bystander effect has been replicated in many experimental situations, and various personal and social conditions associated with this kind of helping have been demonstrated (Garcia, Weaver, Moskowitz, & Darley, 2002; Greitemeyer, Fischer, Kastenmüller, & Frey, 2006; Levine, Cassidy, & Brazier, 2002). A recent study revealed that dangerous emergencies reduce the bystander effect because these situations occur more quickly and are less ambiguously recognized as real emergency situations. In addition, the higher costs for refusing to help result in increasing the costs of helping (Fischer, Greitemeyer, Pollozek, & Frey, 2006).

In nonemergency situations, on the other hand, the presence of others has been found to have a large effect on decisions to engage in more prosocial behavior. In some experiments, using Dictator or Ultimatum Games, participants who had been assured that the experimenter would not know how much money they chose to transfer gave much less money compared to situations in which their allocation was observed by the experimenter (Hoffman, McCabe, Shachat, & Smith, 1994). Participants' contributions in the Public Goods game increased once they realized that their contributions were being displayed publicly (Hardy & Vugt, 2006). In the presence of other participants, subjects spent much more money to punish free riders than under anonymous conditions (Kurzban, DeScioli, & O'Brien, 2007). Even very subtle cues to social presence have a large effect on prosocial decisions. In a Public

Goods game, people who exchanged mutual oblique eye gazes (but no information about the other's transfers) increased their contributions to the public good, compared to a control situation with no eye gaze (Kurzban, 2001). When experimenters in a Dictator game presented purely stylized eyes on a computer screen – a very subtle and specific cue of observability – participants' generosity increased compared to a situation in which eyespot was not presented (Haley & Fessler, 2005). The importance of the eye-detector mechanism was also shown by an experiment in which an image of a robot was presented on the computer screen: The robot's eyes (but not its other parts) resembled those of a human (Burnham & Hare, 2007). Subjects who were being "watched" by this robot contributed 29% more to the public good than did subjects in the same setting without robot observation.

Not surprisingly, cues to social presence in strategic interactions are strongly linked to reputation formation. An individual's prosocial behavior is frequently driven by the desire to acquire a good reputation in her/his own group (Fehr & Fischbacher, 2003; Milinski, Semmann, & Krambeck, 2002). Reputation is valuable in the long run: Empirical studies confirm that human subjects who have been helpful in the past are more likely to receive help from others. For example, players had a higher probability of receiving money in a trust game if they had contributed in the previous Public Goods game (Barclay, 2004). Obviously, to establish a reputation, one's altruistic behavior has to have been observed by group members (Semmann, Krambeck, & Milinski, 2005). Direct observation of someone's behavior is no doubt the most reliable carrier of reputation, but gossip or written record, both of which are susceptible to distortion, also provide information about others. The presence of others has a strong effect on decisions about volunteerism and donations to charities. A recent, real-life experiment showed that more subjects were willing to give assistance if they could make their charity offers in the presence of their group mates than in a situation in which the offers remained concealed from the others (Bereczkei, Birkas, & Kerekes, 2007).

The Costs of Helping Behavior

The effect of the presence of others on offering help has been shown to be highly variable. One of the major factors influencing this relationship is cost. In general, the costs of helping involve lost time, effort, danger, disruption of ongoing activities, etc. Helping is more likely to occur when the rewards for helping outweigh the costs (Dovidio et al., 2006). The Arousal: Cost-Reward model states that a bystander's response is a function of both the costs incurred by helping and the costs incurred by the victim not receiving help. In an experiment, bystanders were more likely to diffuse responsibility when the person in need was physically disfigured (which represents a relatively high cost for

helping) than when the person was not (Piliavin, Piliavin, & Rodin, 1975).

Personal costs are also involved in nonemergency situations. For instance, it was found that negative-mood subjects who were confronted with a high-benefit – low-cost helping opportunity helped more than neutral-mood subjects confronted with the same opportunity, whereas negative-mood subjects confronted with a low-benefit – high-cost helping opportunity tended to help less than neutral-mood subjects confronted with the same opportunity (Weyant, 1978).

The cost-reward analyses of the helpers also depend on the presence of others. A recent study revealed that the presence and attention of others increases the likelihood of making costly charity activities that imply a high level of physical and emotional expenditure (Birkas, Bereczkei, & Kerekes, 2006). More people were willing to give costly support to needy people when their charity offer could be observed by their group members than to people whose offers were made in secret. This may be because the social reward associated with the presence of others outweighs the cost incurred by the charity service. As we have seen before, reputation-gaining is a rewarding strategy for the helper, and people highly value individuals who choose helping behavior with a high expenditure of time, energy, and risk-taking. Altruistic acts may enhance status and reputation of the altruist in his or her social group and yield a long-term benefit, despite the obvious short-term cost (Wedeking & Braithwaite, 2002). When the opportunity to gain reputation as a social reward increases, people are more likely to choose a helping act with a relatively high cost, whereas in the low-reward (no-reputation) situation people prefer less costly helping.

For this reason, in the present experiment we expected that in a high-cost situation people who are being observed by others would be more inclined to volunteer than those who were not being observed.

Personality Factors in Helping Behavior

The presence of others, as a particular situational variable, does not elicit helping behavior independently of personality traits. Most contemporary social psychologists agree that personality characteristics and situational factors can interact to affect people's prosocial decisions (Batson, 1991; Graziano, Habashi, Sheese, & Tobin, 2007). A person \times situation interaction approach may yield the most comprehensive account of the ways dispositions, motivational states, and contexts combine to determine helping behavior. For example, a recent study revealed that when the costs of helping were low, people low in agreeableness – that is those who were less cooperative, trusting and empathetic – increased their helping after being exposed to an empathy-focused indication. Persons high in agreeableness offered help to victims across a wider range of situational contexts, presumably because of their higher level of prosocial motivation (Graziano et al., 2007).

Various personality traits may influence how an individual evaluates other people's presence and observation, but very few studies have been made in this field. This study investigates whether the effect of the presence of others on helping behavior is mediated by the altruist's personality attributes. We hypothesize that both prosocial and antisocial personality traits influence the individual's response to being observed, and that the helping behavior also depends on the cost of the particular altruistic act.

It is well-known that the decision of individuals about helping others is deeply influenced by their prosocial characteristics, such as empathy, sense of responsibility, and helpfulness. Empirical studies confirmed that differences in prosocial personality are associated with differences in prosocial actions that range from willingness to help a distressed individual to heroic rescues of people whose lives were in danger (Dovidio et al., 2006). A higher sense of empathy – a key component of prosocial personality – increases the likelihood that someone will help even when the costs of helping are relatively high (Batson, 1991, Batson, Van Lange, Ahmad, & Lishner, 2003; Bierhoff & Rohmann, 2004). This trait is also related to a long-term commitment to helping when working as a volunteer (Davis et al., 1999).

In keeping with previous findings, we predict that highly prosocial persons are relatively unaffected by situational manipulations. They are likely to help at higher rates across variations in observation and costs, compared to their peers with lower prosocial personalities.

Machiavellianism in the Social Interactions

Machiavellianism is defined as a behavior in which an individual uses another person as an instrument for achieving his/her goals (Byrne & Whiten, 1988; Christie & Geis, 1970; Wilson, Near, & Miller, 1996). It involves a particular kind of worldview and the application of certain behavioral methods and tactics (Gunnthorsdottir, McCabe, & Smith, 2002; McIllwain, 2003). Machiavellian people characteristically attribute negative intentions to others and do not expect cooperation from them; they start from the assumption that others will exploit them, if they themselves fail to do so (Repacholi, Slaughter, Pritchard, & Gibbs, 2003). They are capable of distracting themselves from the emotional effects of situations. They remain "cool-blooded" even in emotionally highly charged situations and do not take on the excitement of others involved (Wilson et al., 1996; McIllwain, 2003). Certain studies even argue that not only are Machiavellian people able to detach themselves from others' emotions, some even lack the capacity to recognize these emotions. According to a number of research results, there is a negative correlation between the level of Machiavellianism and the capacity to recognize and identify emotional features on the faces of others (McIllwain, 2003).

This raises the question whether Machiavellian people truly lack empathy or only have learned to suppress or neutralize it so that it does not hinder the completion of their

aims. From one point of view, they can take over the perspective of others and understand their goals and knowledge and place themselves in their positions without taking on their emotions (McIllwain, 2003). This kind of mind-reading ("cold empathy") can be useful and advantageous in a number of situations: Machiavellian individuals can learn about others' views, intentions, and complicated mental states, but they can avoid the perplexing or depressing impact of their emotions. Other authors state that Machiavellian people are better at controlling their emotions, especially in situations when such emotions might collide with their personal aims. Consensually, cynical Machiavellian people often find excuses for their actions by claiming that others are unreliable, and they would similarly resort to cheating in the given situation (Davies & Stone, 2003).

Because of their specific cognitive orientation, persons with a high level of Machiavellism – so-called high-Mach persons – successfully manipulate others. They can calmly identify the optimal strategy in each situation and behave in a self-interested way. They do not typically engage in helping activities, except when their interest immediately motivates them to do so (Paal & Bereczkei, 2007). Their willingness to help is likely to increase when they believe that generosity is rewarded by the attention and respect of others. Under such circumstances high-Mach persons are expected to behave in a self-interested way: they disguised their selfishness and pretended altruism in the presence of others. However, when the opportunity to gain reputation as a social reward decreases, they are motivated to minimize the costs imposed by helping behavior (effort, time, danger, disruption of ongoing activities, etc.), and are unlikely to engage in prosocial behavior.

The Present Study

The present study focuses on two situational factors: the presence of others and the cost of helping behavior as well as two personality characteristics: prosociality factors and Machiavellianism. On behalf of a charity organization, students of seminar groups were asked to offer support to unfamiliar persons in need, and the variable of the presence of others was manipulated by dividing the groups into two categories according to whether group members could see the others' charity offer or not. Participants could choose of two possible charity acts: one more costly in terms of physical and emotional expenditure, the other with a lower level of effort.

In light of the above theoretical considerations, the following predictions are made:

1. Subjects who are observed by their group mates will show a stronger inclination to provide support than those whose charity offer remains concealed from the group.
2. People who are observed by others will offer more "costly" help than persons whose offers are being not observed.
3. Prosocial personality factors are expected to strongly determine the willingness to help people in need, though

this relationship is relatively unaffected by situational manipulations, such as observation and cost.

4. High-Mach persons (those who obtain high scores on the Mach scale) should be responsive to a strategic distinction between the presence and absence of others. They should be likely to refuse help when others do not observe them, but more willing to give assistance if their prosocial behavior occurs with the knowledge of the others.
5. Persons with high level of Machiavellianism are expected to be sensitive to cost as another situational factor. Under circumstances of observation, they would engage in helping behavior more frequently when help is less costly.

Method

Subjects

194 Hungarian subjects participated in the experiment, 119 women and 75 men. They were second- and third-year students of the Medical School at the University of Pécs (Hungary), who took part in our experiment as volunteers without any compensation. They were members of 18 different seminar groups, each group having between 8 and 14 members. All the members of each seminar group were involved in the experiment.

Materials

To assess the prosocial personality, we used the Social Cooperation Scale of Cloninger's Temperament and Character Inventory (TCI) test (Cloninger, Przybeck, Svrakic, & Wetzel, 1994). The TCI evaluates seven higher order personality or behavior traits. Cooperativeness is a multifaceted, higher-order character trait that consists of the following five aspects or lower-order traits: Social Acceptance/Social Intolerance, Empathy/Social Disinterest, Helpfulness/Unhelpfulness, Compassion/Revengefulness, Pure Hearted Principles (Integrated Conscience)/Self-Serving Advantage. Highly prosocial persons are described as empathic, tolerant, compassionate, supportive, fair, and principled individuals who enjoy being at the service of others and try to cooperate with others as much as possible. They understand and respect the preferences and needs of others as well as their own (Cloninger et al., 1994). In the present sample the internal reliability of Social Cooperation was .86.

Machiavellianism was measured with the Mach IV Scale, a self-rated 7-point Likert instrument (where 1 = *strongly disagree*, 4 = *no opinion*, 7 = *strongly agree*). It is composed of 20 items, such as "Never tell anyone the real reason you did something unless it is useful to do so." The 20 statements are classified into three main areas: 1. views of human nature (9 items) that refer to cognition about people, in particular the

degree of cynicism with regard to the motives and behavior of others; 2. duplicitous tactics (9 items) concerned with manipulative methods of dealing with people; 3. abstract morality (2 items). Participants with high and low scores on the test were separated into categories by a median split. They were often referred to as high-Mach and low-Mach persons, respectively. In light of empirical studies, they differ in many aspects of social behavior, from vocational choice to success at games to sexual strategies (Wilson et al., 1996). Internal reliability in this sample was .76.

Procedure

On the basis of an agreement with the leaders of the seminar groups, the experimenters (two of the authors) visited a seminar session of each seminar group (see details in Bereczkei et al., 2007). The students did not know about the aim of this visit in advance. The experimenters told them that participation in the survey was voluntary and anonymous: Their responses would be kept confidential so that not only outsiders, but even the other members of the group would not have access to them. Then each subject completed the Social Cooperation Scale of TCI and the Mach-IV test. They were informed that there was no time limit for the completion of these tests.

The second stage of the survey took place several weeks later. This time we invited a woman representing a charity organization to ask the students to offer their support to unfamiliar people in need on a voluntary basis free of charge. She visited the seminar groups, handed a sheet to the members which described two forms of support from which the students could make their choice (or could also decide not to provide any help). One choice ("Providing assistance for mentally handicapped children") was more costly in terms of physical and emotional expenditure. The other ("Participating as an organizer in a blood drive") was relatively less costly and demanding a lower level of effort. After completing the whole experiment, other students ($N = 30$) who had not participated in the study and were not informed of the experiment confirmed the difference in the cost of charity service. They were asked to estimate which particular activity requires more energy and emotional involvement in order to be achieved. Using a Likert scale, they judged the assistance provided for mentally handicapped children as significantly more costly than the other charity service ($t = 4.015, p < .001$).

Each charity act was restricted to a single occasion and took approx. 3–4 h. The members of each group were asked to say not only what charity act they would be willing to perform, they also had to give a date by which they would accomplish the task. They were told that for this purpose they would be in telephone contact with a representative of the charity organization. Several weeks later, the representative of the charity organization made an appointment with those subjects who had made contact with her on the phone. She organized a meeting in which she introduced

them to a staff member of the charity organization who informed them about the specific conditions of the charity service.

The variable of observation was manipulated by dividing the groups into two categories according to whether group members could see the others' charity offer or not. In eight of the seminar groups, the potential altruists were asked to publicly declare their intention to help in the presence of group members, so that the others exactly knew what kind of help they undertook (*public offering condition*). In the other groups, subjects were asked to silently fill in a form, so that no one was informed about their charity offer (*anonymous offering condition*). Although, in a strict sense, both conditions involve "the presence of others" (all group members are in the same seminar room), only the public offering condition ensures a sort of "social presence" because this arrangement enables group members to directly observe the behavior of others and obtain information about their prosocial decisions. In the anonymous condition, group members cannot learn who is willing to volunteer and who is not. The name of the variable we used in this respect is "Publicity."

Results

Publicity and Volunteerism

Publicity was found to have a strong effect on the charity offer. The participants who were given the chance to announce their wish to help publicly in the presence – and with the knowledge – of their group mates show a stronger inclination to provide support than those whose charity offer remained concealed from the group. Subjects in the public offer groups were willing to give assistance more often than those in the anonymous groups (59/116 vs. 28/78, $\chi^2 = 4.23$, $p < .01$). Contrary to our prediction, however, they did not offer more costly help than persons in the anonymous groups ($\chi^2 = 0.46$, $p > .05$). Table 1 shows the distribution of helping act in terms of publicity and costs.

When the distribution of charity offers was taken into consideration across groups, a homogeneous pattern appeared. The nine public groups did not significantly differ in the rate of potential helpers and nonhelpers ($\chi^2 = 10.92$, $p > .05$), suggesting that the offer of charity that people declare is relatively independent of the actual group they belong to.

Prosocial Factors

Prosocial personality factors seem to strongly determine the willingness to help people in need. Logistic regression analysis revealed that subjects with higher scores on the Social Cooperation subscale of TCI were more helpful than those with lower scores (Wald = 16.403, odds ratio = .865,

Table 1. Distribution of more and less costly helping and nonhelping activities in public and anonymous groups

Conditions	Offering help (N = 87)		Not offering help (N = 107)
	More costly act	Less costly act	
Public groups	36	23	57
Anonymous groups	14	14	50

$p < .001$). The interaction between Social Cooperation and Publicity was not significant (Wald = 2.549, odds ratio = 1.015, $p > .05$), showing that the social presence of others does not profoundly change the relationship between prosocial personality and the likelihood of volunteerism. Social Cooperation proved to be predictive for altruistic intention in both the public and the anonymous groups (33.81 ± 4.18 , $N = 59$ vs. 31.21 ± 4.75 , $N = 57$, $t = 3.128$, $p < .01$, and 33.46 ± 4.6 , $N = 28$ vs. 30.30 ± 5.07 , $N = 50$, $t = 3.013$, $p < .01$, respectively).

A significant relationship was found between personality factors and the cost of helping activity. Subjects who received higher scores on the Social Cooperation scale were willing to offer more costly help ("Providing assistance for mentally handicapped children"), compared to those who offered less costly help ("Participating as an organizer in a blood drive") (Wald = 7.263, odds ratio = .848, $p < .01$). This occurred in both the public and anonymous groups (35.22 ± 3.30 , $N = 23$, vs. 32.92 ± 4.47 , $N = 36$, $t = 2.12$, $p < .05$; and 35.00 ± 3.96 , $N = 14$ vs. 31.937 ± 3.67 , $N = 14$, $t = 2.13$, $p < .05$, respectively). However, the Publicity \times Social Cooperation interaction did not reach a significant level (Wald = 1.451, odds ratio = .989, $p > .05$), showing that the degree of the cost of helping behavior offered by the subjects with high prosocial personality was relatively independent of the presence or absence of others.

Machiavellianism

Machiavellianism has a different effect on helping behavior. In general, it proved to be predictive for charity offers. Subjects who received higher scores on the Mach-IV test were less likely to give help than those with lower scores (Wald = 7.549, odds ratio = 1.030, $p < .01$). Interaction between Publicity and Machiavellianism was also significant (Wald = 6.058, odds ratio = 1.011, $p < .05$), showing that Machiavellianism may be a personality character mediating between observation and willingness to volunteer. When the presence of others is taken into consideration, a remarkable finding emerges (Figure 1): Logistic regression revealed that Machiavellianism \times Publicity interaction for a charity offer was significant (Wald = 5.792, odds ratio = 1.010, $p < .05$), suggesting that people with different scores on Mach-IV scale behave differently in public

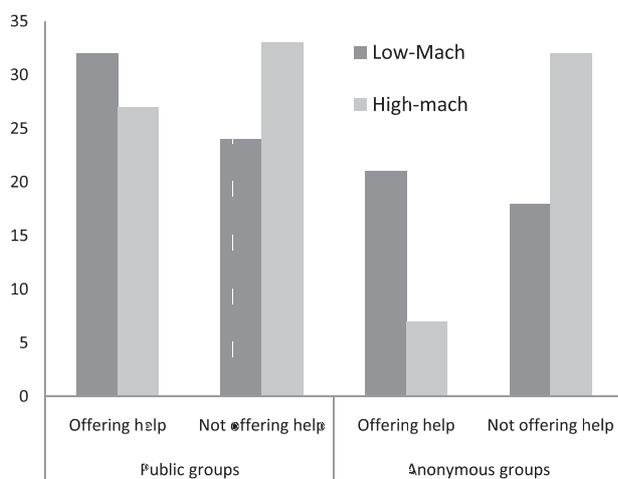


Figure 1. Number of high-Mach and low-Mach participants who offered/did not offer help in public and anonymous groups.

and anonymous conditions. In the public groups – where offers were made in the presence and with knowledge of others – participants offering help had Mach scores that did not significantly differ from the scores of those who did not offer help (72.41 ± 13.74 , $N = 59$ vs. 75.16 ± 14.43 , $N = 57$, $t = 1.052$, $p > .05$). However, in the anonymous groups – where the offers were made without the knowledge of the others – Machiavellianism had a large effect on volunteering. In the anonymous condition subjects who did not offer help had higher scores on Mach-IV than those who did offer help (77.12 ± 13.64 , $N = 50$ vs. 66.75 ± 13.11 , $N = 28$, $t = 3.265$, $p < .01$). By using a median split, high-Mach and low-Mach persons proved to behave differently. As Figure 1 shows, in the public groups they offered help with a close to equal probability ($\chi^2 = 1.71$, $p > .05$), whereas in the anonymous groups high-Mach persons were more likely to refrain from offering help than low-Mach persons ($\chi^2 = 10.92$, $p < .005$).

The individual variance in Machiavellianism was not associated with the costs of the helping behavior offered by the subjects. Contrary to our prediction 5, Machiavellianism did not show a significant relationship with the cost of assistance (Wald = 1.048, odds ratio = 1.017, $p > .05$), and Machiavellianism \times Publicity interaction for cost was not significant either (Wald = 0.361, odds ratio = .996, $p > .05$).

Discussion

The presence of others has long been known to affect decisions to engage in helping behavior. Whereas the presence of bystanders decreases the likelihood of providing help, in nonemergency situations people rather engage in more helping behavior when others are observing them.

Prosocial personality characteristics have also been found to have a strong impact on the likelihood of altruistic actions. Nevertheless, relatively few studies have attempted to examine how personality characteristics interact with being observed by others while making decisions on prosocial activities.

The present study focused on two situational factors: the presence of others and the cost of helping behavior, and on two personality characteristics: prosociality factors and Machiavellianism. In general, the fact that group members could observe others' decisions profoundly increased the subjects' willingness to offer help. In public groups more than twice as many individuals offered charity service than did individuals in anonymous groups. They were also more likely to offer costly helping, compared to persons in anonymous groups. This may be because the presence of others provides an opportunity to gain reputation as a social reward, which increases the reward/cost rate.

However, an alternative explanation suggests that the participants' decision on volunteerism might be affected by their fellow group members' declaration to help or not, rather than their own ambition to elevate their reputation. It is difficult to rule out this possibility because reputation gaining requires the presence and observation of others in the group. However, one of our results seems to contradict this alternative explanation. We did not find significant difference across groups in the distribution of helping/non-helping behavior. The distribution of charity offers among groups appeared relatively homogeneous, suggesting that belonging to a particular group does not profoundly impact helping decisions, and the willingness to offer charity service is likely to come from an inclination to reputation gaining (Bereczkei et al., 2007). Of course, the multiple impact of group members on potential helpers needs further empirical studies.

In addition, the positive effects of the presence of others may be moderated by prosocial personality traits. Our results show that altruistic personality characteristics work relatively independently of situational factors, such as the presence of others and the cost of altruistic acts. Subjects with higher scores of Social Cooperation were more likely to engage in helping activities than those low on this scale, regardless of whether they offered help on public or anonymous conditions and the perceived degree of the cost of helping behavior. These findings are in line with former results that show that prosocial factors, especially empathy, involve the relative independence of situational factors. For example, several studies have revealed that empathic concern is likely to induce prosocial behavior in both "easy-escape" and "difficult-escape" situations (Batson, 1991; Bierhoff & Rohmann, 2004).

These results confirm the possibility of true altruism, which is a motivational state with the ultimate goal of increasing someone else's welfare (Batson, 1991). In the present study, only a minority of subjects were willing to offer help, even when the offer of charity was not being observed by others and the costs for helpers were high. It is possible

that people with high scores on Social Cooperation possess an empathic concern as another-oriented emotional response that drives helping behavior under a relatively wide range of conditions.

Machiavellianism proved to be more sensitive to the context of observation (publicity). Low-Mach subjects were more likely to give assistance to needy persons than were high-Machs. The effect of Machiavellianism on charity offers strongly depended on the social presence of others. Subjects with high scores on Mach-IV were unlikely to give assistance when they were not being observed by the others. However, they increased their help to others when their group mates could observe their behavior. In other words, High-Mach persons gave specific responses to different social circumstances: They disguised their selfishness and pretended altruism in the presence of others, but realized their self-interest when others could not observe their behavior. They may have a kind of impression motivation: They consider altruism as a sort of a tool that increases their recognition and reputation in their group. Their effort to improve their image and status within a group may be directly responsible for their helping behavior (Bereczkei et al., 2007).

This result seems to be consistent with the findings of several earlier studies (Gunnthorsdottir et al., 2002; Paal & Bereczkei, 2007; Wilson, Near, & Miller, 1998). People with high Machiavellianism can calmly identify the optimal strategy in each situation. They behave in a self-interested way and are more risk-taking than low-Mach persons in that they may be willing to take chances in interpersonal encounters. In a study that used Trust-game, high-Mach persons were less willing to reciprocate some of the trust they had received from their partner (Gunnthorsdottir et al., 2002).

Contrary to participants in experimental games who were paid at the end of the experiment, subjects in our study were not offered an immediate reward. We speculate that their benefit may result from a more indirect channel: the reputation they gain in their group. Generosity toward strangers pays off because it confers the image of a valuable community member who may obtain a benefit in a future encounter as recipient. Experiments have confirmed that players have a higher probability of receiving a reward in the second game if they have contributed more in the previous one (usually public goods) game (Barclay, 2004; Fehr & Fischbacher, 2003; Milinski et al., 2002; Wedekind & Braithwaite, 2002). Instead of experimental games, Bereczkei et al. (2007) examined "real-life" conditions with methods very similar to those of the present study. They found that those who were willing to participate in a particular charity activity received a significantly higher score on the scales measuring sympathy and trustworthiness than the others. These results suggest an interpretation of our findings in the present study: When others can observe them, High-Mach persons may tend to conceal their selfish and exploitative character in order to gain or maintain reputation and prestige in their own groups that may bring long-term benefits for them.

Persons with a high level of Machiavellism might even compete for the benefits of reputation. It is possible that the main impulse of their altruism is the endeavor to improve their image among their group members. Competitive altruism occurs when people go beyond behaving altruistically in the presence of others and instead actively try to appear more generous than others, and this image is unambiguously demonstrated (Barclay & Willer, 2007). High-Mach persons may send dishonest signals of generous intent when they expect reputational benefits related to altruism. This is because in public conditions when the participants' decisions are observed, the potential gains from being preferred by others in future interactions outweigh the cost of being generous. They did not offer help, however, in anonymous conditions because in such circumstances the cost of behaving altruistically outweighs the potential benefits. Future studies may reveal how high-Mach persons evaluate other conditions, e.g., fear of being punished, adherence to social norms in order to adapt their behavior to different situations.

We did not find an association between the subjects' Machiavellianism and the costs of the helping behavior they offered. Contrary to one of our hypotheses, high-Mach persons were not more willing to engage in a more costly helping behavior under the circumstance of observation than in anonymous condition. They may be less sensitive to the perceived cost of helping behavior than to the publicity of helping behavior. The lack of a significant relationship in this respect may also come from the relatively small size of the particular subgroups of our sample: The number of persons who stayed in the public groups, offered costly help, and received high scores in the Mach-IV test might not be large enough to lead to conclusive results. A future study may clarify the relationship between Machiavellianism and the costs of helping behavior.

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