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Short Communication

Nothing ventured nothing gained: Strong associations between reward sensitivity and two measures of Machiavellianism [☆]

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ABSTRACT

Recent theoretical work on the Life History Theory and empirical findings on Machiavellianism suggest that Machiavellian individuals are motivated to acquire short-term benefits and prioritize situations with high potential rewards. Accordingly, in our study, we investigated the associations between reward/punishment sensitivity and Machiavellian interpersonal tactics with self-report measures. Moreover, as a first attempt, we investigated the correlates of Machiavellianism and the behavioral preference for rewards with the IOWA Gambling task (IGT). The results showed robust positive associations of Machiavellian behavioral characteristics with Sensitivity to Reward, and a moderately negative correlation with Sensitivity to Punishment. This finding was further supported by IGT: Machiavellians tended to make reward-oriented decisions.

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1. Introduction

Fast life strategy has been shown to be associated with many personality characteristics (Jonason, Koenig, & Tost, 2010) of the Machiavellian interpersonal behavior, like diminished self-control (Jonason & Tost, 2010), selfishness, inability to delay gratification (Brumbach, Figueredo, & Ellis, 2009) and exploitation of others (McDonald, Donnellan, & Navarrete, 2012). According to the Life History Theory (Wilson, 1975), the fast life strategies might be the results of behavioral adaption to an unpredictable environment encountered during childhood. Of the many Machiavellian traits, particularly the *behavioral traits* have been linked to fast life strategy (e.g., Jonason et al., 2010). More specifically, previous studies suggest that Machiavellians might be more motivated to use their manipulative behavioral tactics if presented with cues for possible rewards, and they have greater abilities in detecting and evaluating potential threats to their self-interest (e.g. Spitzer, Fischbacher, Herrnberger, Gron, & Fehr, 2007; Jones & Paulhus, 2009). This suggestion is also supported by a recent fMRI study showing that individuals who scored high on Machiavellianism had consistently

elevated neural activity in brain areas involved in the anticipation of success and reward-related decision making in social dilemma situations (Bereczkei, Deak, Papp, Perlaki, & Orsi, 2013). Taken the previous findings together, individual differences in motivation for punishment and reward (Torrubia, Avila, Moltó, & Caseras, 2001) might be strongly associated with Machiavellianism. Thus, it is plausible to predict that Machiavellian individuals tend to be sensitive to rewards but less sensitive to punishments. In the current study, for the first time in the literature, we tested this prediction by using self-report instruments that assess Machiavellianism (Machiavellian Personality Scale, MPS; and Mach-IV), and reward/punishment sensitivity (Sensitivity to Reward and Sensitivity to Punishment Questionnaire, SPSRQ).

As mentioned above, the behavioral facet of Machiavellianism might particularly be related to Machiavellians' preference for a faster way of life suggesting a strong *positive association* between reward sensitivity and Machiavellian behavioral tactics. We tested this assumption by investigating the association between reward sensitivity and the Machiavellian interpersonal tactics assessed by a subscale in Mach IV.

However, Machiavellians are not just tactician and manipulative, but there are clear indications that they tend to make amoral decisions if opportunities for gain emerge (Gunnthorsdottir, McCabe, & Smith, 2002). Their amoral behavioral attitude is proposed to be measured by specific subscales in MPS (Dahling, Whitaker, & Levy, 2009; see method sections for more details). A positive association between these subscales and reward sensitiv-

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ity are predicted. Moreover, these subscales might even be stronger predictors of reward sensitivity as compared to the Mach IV subscale measuring Machiavellian interpersonal tactics without taking amorality into account.

In addition to the self-report scales, the behavioral measures of delay gratification and risk-taking were assessed by the Iowa Gambling Task (IGT). IGT as a card selection game refers to a learning process via monetary rewards and punishments, where the advantageous tactic is to forego the selection of cards with large immediate rewards for card selections with small longer-term rewards in order to avoid larger monetary losses. In IGT, high, short-term gains are accompanied with higher probabilities of larger losses (Bechara, Damásio, Damásio, & Anderson, 1994), consequently individuals with persistent preferences toward high, immediate rewards (in accordance with a fast life strategy) usually perform the task with less advantageous tactic than those with lower sensitivity to immediate rewards. By IGT, we aimed at investigating the association between Machiavellianism and reward sensitive decision-making. More specifically, we predicted that a disadvantageous tactic (i.e. higher reward per card selection but higher future losses) is applied by Machiavellian individuals.

2. Method

2.1. Participants

The participants included 130 individuals (72 men) 18 and 33 years of age ($M = 22.41$, $SD = 3.01$). All of the participants provided written consent.

2.2. Measures and procedure

Two questionnaires were used to assess Machiavellianism: Mach IV (20 items; Christie & Geis, 1970) and Machiavellian Personality Scale (MPS; 16 items; Dahling et al., 2009). Both questionnaires are self-report scales designed to measure an individual's tendency to manipulate and deceive other people for personal – often material – gain. The two scales share many similarities, but, in contrast to Mach IV, MPS has also emphasis on the dimensions of internal beliefs and motivations behind Machiavellian behavior (see details below). In the current study, each measure returned acceptable internal consistency (Mach IV: Cronbach's $\alpha = 0.68$; MPS: Cronbach's $\alpha = 0.81$). Many different subscales are known for Mach IV, and MPS. In order to test the associations between reward sensitivity and the behavioral aspects of Machiavellianism we selected subscales only that refer to behavioral strategies, or behavioral motivations. In total, scores for 4 subscales were calculated: Interpersonal Tactics (Mach IV), Amoral manipulation (MPS), Desire for Control (MPS), and Desire for status (MPS). The Interpersonal Tactics subscale of Mach IV refers to a general behavioral strategy of Machiavellians (Cronbach's $\alpha = 0.61$). In contrast, the Amoral Manipulation subscale in MPS (Cronbach's $\alpha = 0.81$) characterizes Machiavellian tactics with disregarding moral norms in decisions and preferring behaviors beneficial for the self even if it is deteriorative for others. The subscales, Desire for Control and Desire for Status are not typically behavioral scales but they represent strong motivational aspects of Machiavellian behavior. More specifically, these scales define the attempts of Machiavellians to execute more proactive control over their environment, which may enable them to rule or successfully foresee situational outcomes (Dahling et al., 2009). Of these two scales, the Desire for Status did not reach acceptable internal consistency ($\alpha < 0.5$), therefore only Desire for Control was used in the analyses (Cronbach's $\alpha = 0.7$). There are many other subscales of Mach IV (Cynical View of Human Nature, and Disregard for Conventional

Morality), and MPS (distrust of others) without referring to behavior. These subscales were not entered at any of the analyses.

The Sensitivity to Punishment–Sensitivity to Reward Questionnaire (SPSRQ) (Torrubia et al., 2001) is a 48-item questionnaire in a yes–no format that includes two 24-item scales: Sensitivity to Punishment (SP) and Sensitivity to Reward (SR). The SP scale (Cronbach's $\alpha = 0.89$) measures individual differences in behavioral inhibition or passive avoidance in situations involving the possibility of aversive consequences or novelty, as well as the cognitive consequences of the threat of punishment or failure. The SR scale (Cronbach's $\alpha = 0.75$) involves items dealing with specific rewards (like money, power, sensation seeking, etc.), and situations in which the person could engage in approaching behaviors to obtain these rewards.

In addition to the surveys, 60 participants from the total sample (aged from 19 to 33 years, 32 men) were randomly selected and asked to perform an Iowa Gambling Task (Bechara et al., 1994). An a priori power analysis determined that a minimum sample of 46 participants is adequate for obtaining a statistical power of 0.8, assuming a correlation effect size of 0.4. In IGT, participants are presented with four virtual decks of cards (A, B, C, D) on a computer screen. They are instructed that each time they choose a card they will win some labor money, but the particular likelihood of choosing a particular card can cause them to lose some money. The goal of the game is to win as much labor money as possible after 100 card selections. The losses are distributed differently thus, some decks are “disadvantageous decks” (A and B), and other are “advantageous decks” (C and D), because some will lead to losses over the long run, and others will lead to gains. More specifically, decks A and B were associated with high reward per choice but also high future losses. The IGT performance strategy was measured by subtracting the number of disadvantageous selections from the advantageous card selections $[(A + B) - (C + D)]$; deck preference]. A score above zero implied that participants selected cards disadvantageously, suggesting a stronger tendency to choose immediate high rewards. We also analyzed the total labor money earned.

3. Results

3.1. Self-report surveys

The associations (i.e. correlation coefficients and standardized beta values) found between Machiavellianism and SPSRQ scores are presented in Table 1. In accordance with our main prediction, both Mach IV and MPS total scores were found to be positively associated with SR suggesting that Machiavellians tend to have a reward-sensitive personality. In addition, a multiple linear regression revealed that MPS is a more reliable predictor of SR than Mach IV: Regressing SR on the total scores of MPS and Mach IV as predictors, only MPS reached significant association with SR.

The analyses also yielded significant associations between the behavioral/motivational factors of Machiavellianism and reward/punishment sensitivity. To evaluate the unique contributions of the behavioral and motivational aspects to SR and SP, we again conducted multiple linear regressions. The SR and SP scores were separately regressed on one block of predictors with Amoral Manipulation, Interpersonal Tactics and Desire for Control. The Amoral Manipulation and Desire for Control factors were revealed as independent predictors of SR. These findings support our predictions that Machiavellian tactics with amoral attitude is positively associated with sensitivity to rewards. The strong association found between SR and Desire for Control suggests however that even the motivational aspects of Machiavellian behavior are associated with a preference for reward. In contrast to SR, SP showed

Table 1
Associations of the Machiavellian measures and reward/punishment sensitivity.

| | <i>r</i> (β) | | <i>R</i> ² | Amoral manipulation | Interpersonal tactics | Desire for control | <i>R</i> ² |
|---------------------------|----------------------|-----------------|-----------------------|---------------------|-----------------------|--------------------|-----------------------|
| | Mach IV total score | MPS total score | | | | | |
| Sensitivity to reward | .32** (–.02) | .56** (.57**) | .312 | .43** (.25**) | .28** (–.10) | .58** (.51**) | .381 |
| Sensitivity to punishment | –.03 (.25) | –.31** (–.46**) | .138 | –.19* (–.19) | .007 (.27**) | –.32** (–.36**) | .156 |
| IGT total labor money | –.33* (–.38*) | –.16 (.09) | .112 | –.16 (–.11) | –.40** (–.46**) | –.13 (.00) | .167 |
| IGT (A + B) – (C + D) | .26* (.16) | .26* (.15) | .082 | .30* (.11) | .38** (.31*) | .19 (.02) | .155 |

Note: correlation between MPS and Mach IV (*r*) = .59; *r*: correlation coefficients; regression coefficients are in brackets (β); *R*²: R-squared effect size for multiple regression.

* *p* < .05.

** *p* < .01.

negative association with Amoral Manipulation and with Desire for control, but only the latter factor was found to be an independent predictor of SP. This finding suggests that Machiavellians' motivation to dominate interpersonal situations is associated with decreased sensitivity to the possible negative outcomes.

3.2. Iowa gambling task

The results presented in Table 1 indicate significant associations between Machiavellianism and IOWA gambling performance. Mach IV total score was negatively correlated to the amount of labor money earned by the end of the task (95% CI: –.08 to –.54). The multiple regression analysis indicated the Interpersonal tactics factor as independent predictor of this association (95% CI: –.16 to –.59). Unlike Mach IV, MPS total score was, however, not significantly associated with earned money.

In addition, both Mach IV and MPS total scores were found to be significantly associated with deck preference (95% CI: .006–.48). Nevertheless, regression analysis revealed the Interpersonal tactics subscale as the only independent predictor of deck preference (95% CI: .14–.58). This positive association suggests that Machiavellian interpersonal tactics are manifested in preference for “disadvantageous decks”, namely for decks providing high reward per choice but also high future losses (i.e. decks A and B).

4. Discussion

A straightforward theoretical approach to understand Machiavellian behavior is the Life History Theory (LHT). LHT assumes an increased preference for short-term gains in case of a fast life strategy that is also followed by Machiavellian individuals (see e.g. Brumbach et al., 2009). In line with this assumption, the prediction of a positive association between reward sensitivity and Machiavellianism was tested in the current study. The findings are robust for both Machiavellian measures (i.e. MPS and Mach IV) and suggest that Machiavellian behavior can be characterized with a strong preference for rewards. As it is also proposed by the Life History Theory, holding of immediate rewards could be a beneficial behavior in uncertain circumstances (Griskevicius, Tybur, Delton, & Robertson, 2011). As a recent study indicates (Láng & Birkás, 2014), the unpredictable conditions in adolescence years might have indeed crucial consequences on the development of Machiavellian traits: Machiavellians were less satisfied with family life in their childhood. This suggests, however, that the reward sensitivity of Machiavellian individuals as found in this study might be an outcome of the unpredictable environment encountered during childhood.

Life history strategies can be characterized by three kinds of traits (Brumbach et al., 2009): biological, behavioral, and cultural traits. We also examined the associations between the Machiavellian behavioral traits and reward sensitivity as an important aspect of the life strategies. Our results showed that each of the

investigated behavioral or behavioral motivation traits (i.e. Interpersonal tactics, Amoral manipulation, and Desire for control) was related positively to reward sensitivity and negatively to punishment sensitivity suggesting that the manipulative tactics are essential aspects of the Machiavellian fast life strategy. The difference in predictability between Amoral manipulation and Interpersonal tactics, might be related to previous observations on Machiavellians' amoral decisions in interpersonal situations, which decisions are integrated with their manipulative tactics. Accordingly, self-report scales referring to Machiavellian behavior could provide better associations with the aspects of the Machiavellian fast life history strategies.

As the main conclusion of the self-report data, Machiavellians are more prone to rewards and pay less attention to the cues for punishments. The performance in IGT provides additional evidence for this statement: Machiavellians tended to select disadvantageous decks suggesting a preference for immediate rewards despite of the potential negative consequences (i.e. gaining less amount of money in total). In contrast to findings on the SPSRQ scales, IGT was principally related to the subscale of Interpersonal tactics. This association might be due to the computerized performance of IGT which differs from an interpersonal situation, and so amorality could not be play any role in task performance. Consequently, IGT performance might be associated with general Machiavellian tactics.

Finally, two limitations of the study have to be mentioned. First, the internal consistency of the Mach IV was just acceptable. Second, although we found strong associations between IGT performance and Machiavellianism, because of the wide range of the confidence intervals of the correlations, a replication of this measure on a larger sample is suggested.

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