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# Machs in Time and Space: Time Orientation of Machs with respect to Work Addiction

Ziel der Forschung war es, solche Verhaltensformen zu beschreiben und darzustellen, die unseren Alltag und unsere anderen gesellschaftlichen Interaktionen beeinflussen. Eine weitere Zielsetzung der Forschung bestand darin, eine Verbindung zwischen Machiavellismus, Zeitperspektive und Arbeitsabhängigkeit zu finden. Zu diesen drei Untersuchungsgebieten wurde als Methode die Durchführung einer Befragung mittels eines Fragebogens verwendet. An der Forschung nahmen rund 200 Personen teil. Der Fragebogen bildete die Kurzfassung von Machiavellis Persönlichkeitsskala (MPS), die Kurzform von Zimbardos Fragebogen zur Zeitperspektive (ZTPI; Zimbardo Time Perspective Inventory) und die kürzlich entwickelte Bergen Work Addiction Scale (BWAS). Das Ausfüllen der Umfrage war anonym. Bei der Auswertung von Befragungsdaten wurde die Korrelation analysiert. Neben der Beeinflussung wurde nach Antworten auf die eventuellen gesundheitsschädigenden Faktoren der Korrelation der oben genannten Skalen gesucht.

The aim of this research project is to describe and demonstrate behavioral patterns that influence our everyday life and our social interactions. Another goal of our research is to find a link between Machiavellism, time perspectives, and work dependency. We used a questionnaire survey as a method for these three study areas and approximately 200 people took part in our research. Our questionnaire used the short version of the Machiavelli Personality Scale (MPS), the short form of Zimbardo's Time Perspective Inventory (ZTPI), and the recently developed Bergen Work Addiction Scale (BWAS). Completion of the survey was done anonymously. When evaluating the survey data, the correlation was analyzed. In addition to the influence, we wanted to get an answer to the possible health-damaging factors by the correlations of the above-mentioned scales.

Jelen empirikus kutatás célja, hogy olyan viselkedésformákat járjon körül és mutasson be, amelyek befolyásolják a mindennapjainkat és egyéb társadalmi interakcióinkat. Kutatásunk további célkitűzése, hogy kapcsolatot találjon a machiavellizmus, az időperspektíva és a munkafüggősség között. A három színtér együttes vizsgálatához kérdőíves módszert használtunk. Kutatásunkban 200 ember vett részt. A kérdőívünket a rövidített Machiavelli Személyiség Skála (MPS), a rövidített Zimbardo Időperspektíva Készlet (ZTPI) és a rövidített Bergen Munkafüggőség Skála (BWAS) alkotta. A mintavétel anonim módon történt. A minták kiértékelésénél az együttjárásokat vizsgáltuk. A befolyásolás mellett, választ szerettünk volna találni, továbbá a fent említett skálák korrelációinak esetleges egészségkárosító tényezőire.

Cilj istraživačkog projekta je bio opisati i prezentirati takve obrasce ponašanja koje utječu na naš svakodnevni život i druge društvene interakcije. Dodatni cilj ovog istraživanja je pronaći vezu između makijavelizama, vremenskih perspektiva i radne ovisnosti. Za ova tri područja istraživanja korištena je anketna metoda pomoću upitnika, a u istraživanju je sudjelovalo oko 200 ispitanika. Sama anketa je bila kratka verzija Machiavellijeve skale ličnosti (MPS), kratkog oblika Zimbardovog upitnika vremenske perspektive (ZTPI; Zimbardo Time Perspective Inventory) i nedavno razvijene Bergenove skale za zavisnost od posla (BWAS; Bergen Work Addiction Scale). Ispunjavanje ankete je bilo anonimno. U vrednovanju podataka istraživanja korištena je korelacijska analiza. Pomoću korelacija navedenih mjerila, osim samog postojanja utjecaja, nastojao se dobiti odgovor o mogućim štetnim čimbenicima na zdravlje.

The paper intends to present the relationship of behavioural forms on which empirical research has not been conducted yet. The aim of our research is to find a relationship between Machiavellianism, time perspective and work addiction. We have examined the relationship of these three concepts with validated questionnaires. 200 respondents were invited to take part in the research. The set of questionnaires consisted of the shortened Machiavellian Personality Scale (MPS), the shortened Zimbardo Time Perspective Inventory (ZTPI) and the shortened Bergen Work Addiction Scale (BWAS). Sampling was anonymous

and voluntary. In the first part of the paper we will try to clarify the theoretical background of the research instruments and highlight the relationship between these behavioural forms. In the second part, we will present our research and analyse the correlations. In the third part, we will summarise the findings of our hypotheses and present potential research.

Niccolò Machiavelli settled down in the countryside in 1513 and wrote his main work "The Prince", which consists of 26 chapters, within one year. This book earned him a reputation as

a historian, politician, philosopher and writer (Makkai, 1977). In his book the author introduced a misunderstood behavioural form which has become dominant in the personality of several important leaders. By the middle of the 16th century, the name of Machiavelli and especially Machiavellianism became popular words to describe unscrupulous knavery and calculating immorality (Szigethy, 1977). The aim to influence and manipulate is one of the distinctive the characteristics of Machiavellianism. While influence usually means "having an effect on somebody or something" or to using another person for the service of personal purposes or interests, manipulation has a much more disapproving, expressly negative connotation. It means cunning and unfair scheming, usually related to business. When it comes to the exhaustive definition of Machiavellianism, it refers to cunning and unfair scheming which is cruel and does not only occur in business circles (Szigethy, 1977).

# The Feelings of Machs

Research conducted in this field attaches great importance to emotional detachment and emotional coldness - the characteristics of Machs. They avoid engaging in events, are not moved by the emotional side of events and they approach everything in a down-to-earth manner. Machs control their emotions and fail to invest in relationships. They lack interpersonal warmth in their social interactions. It is important to note since the emotional detachment serves as a protective mechanism which enables these people to think and act calmly and rationally even when they carry great emotional burden (Smith and Mackie, 2004). Consequently, Machs are unable to perceive others as human beings; therefore, they treat others like objects. This implies that Machs lie and deceive if it is in their own interest. They are willing to follow social norms and adapt to the interests of a group if it is necessary and favourable (Czibor and Bereczkei, 2011).

# The Relationship between Machiavellianism and Theory of Mind

Theory of mind (ToM) is the ability to attribute mental states to others. ToM enables us to reco-

gnize people as other beings – both physically and mentally. This ability plays an important role in our social life. On the one hand, it facilitates cooperation between people, and on the other hand, it makes it easier to manipulate others (Paál and Bereczkei, 2006). Everybody has their own inner world that guides them but it is invisible to our senses. Mindreading is essential because if we were unable to do so we could judge our relationships only by physical characteristics. The ability to adapt plays a crucial role in the development of ToM. Researchers believe that this phenomenon is only characteristic of human beings (Paál and Bereczkei, 2006). Complex ToM is beneficial since it increases the number of individual abilities which are necessary for us to understand the behaviour and activities of others. These abilities include subtle tactics (which we need to cooperate with others or to hinder or manipulate others in a competitive situation). The ability of advanced mindreading has two beneficial effects on our interpersonal interactions. First, it makes cooperation with others easier since we can guess their mental state by observing them and their activities. Consequently, successful cooperation can develop more easily within a group. Secondly, the ability to attribute a mental state helps us to achieve a more favourable position compared to others (or to manipulate others in a certain situation in order to reach our goals by using such principles and automaticity that work well based on our personal experiences (Martin, Goldstein and Cialdini, 2015)). This means that if we can read others' minds, we can predict their next step in advance which enables us to choose our next step. Accordingly, we can influence and change our own steps to make others do what we want. Literature refers to this automaticity as the "click-whirr" mechanism (Cialdini, 2009).

# Presentation of Empathy in the light of Theory of Mind and Machs

Empathy has several definitions. Researchers use different descriptions, however, introducing the terms of cold and hot empathy can help us have a better understanding of the view that we would like to discuss (Láng and Birkás, 2014). Cold empathy is the cognitive process of understanding the state of the other, e.g. happiness or disappointment, and being able to grasp their fee-

lings although we do not share their emotions, therefore we can empathise with their state while staying unaffected. This enables mindreaders to try to improve the other person's state, or to influence them based on the emotions present in a way that serves their own interests (Smith and Mackie, 2004). Hot empathy also uses this mechanism, however, in this case we do not only grasp and empathise with the other person's emotions, but we also understand and experience them. Due to this phenomenon, the possibility of exploitation disappears, and we are able to improve the other person's state. However, the motivations behind this have not been clarified so far, that is, whether we behave like this to help the other person or to ebb our uneasy feelings. The aforementioned emotional detachment and cold empathy are characteristics of Machs (Szijjártó and Bereczkei, 2015). Having a self-interest driven personality precludes the possibility of experiencing others' emotions since treating others as an object does not help to recognize emotions. In this case, others' emotions are only tools for Machs to reach their own goals (Láng and Birkás, 2014). The self-interest driven personality structure raises another question: What is these personalities' relationship with time (since perfect timing is crucial for their tactic to be successful)?

# The Psychology of Time Perspective

According to Zimbardo and Boyd (1999), time orientation is inseparable from personality. However, their opinion also suggests that someone's attitude towards time can be changed. Time perspective is a psychological expression meaning the process of sorting our personal experiences into time frames or time categories. This is one of the characteristics of psychological time, also known as subjective time, which differs from the clock time, i.e. objective time. There are three different categories based on how we sort our memories and thoughts. If we deal with what is over, we are past-oriented. If we focus on present decisions we are most likely present-oriented, while if we concentrate on our future goals our behaviour is future-oriented (Zimbardo and Boyd, 2012). These three dimensions can be divided into subcategories: past-positive, past-negative, present-hedonistic, present-fatalistic, future-oriented and transcendental future-oriented. Time paradox means that our attitudes towards time have a profound impact on our lives, yet we rarely recognize it. No matter how many attractive characteristics each time perspective category has, if we attach too much importance to any of them, their negative features might outweigh their benefits. Our relationship with time is significant since time is present at every decision. Manipulators can take advantage of this mechanism of action, whilst also being influenced by time, due to its paradox nature (Orosz, Dombi, Tóth-Király and Roland-Lévy, 2015).

#### The Phenomenon of Work Addiction

Work addiction is a relatively new research field in psychology since the phenomenon has been discussed for 20 years. Its main reasons are the use of rapidly developing technological devices on the labour market and the appearance and explosive spread of work forms related to these technical achievements. Regarding the personal aspect of this phenomenon, employees often do overtime in this fast-moving world. They bring their work-related tasks home which means they must choose between their personal lives and their jobs. This phenomenon is an addiction; therefore, it often happens that the addict chooses work and work-related activities over personal life and family. They cannot control work, and – in most cases – they overextend themselves because they feel the urge to work. Employees are exposed to danger because they work hard and are conscientious, therefore they devote all their attention and energy to the work, which leads to addiction. The proof for this is that work makes the person happy and the more they work the better they feel (Griffiths and Demetrovics, 2012). However (similar to other addictions), this one also involves great danger related to health and interpersonal interactions. We can observe that personal relationships and free time activities are disappearing due to the boundless energy devoted to hard and uncontrolled work. Consequently, the more serious the addiction becomes the more the health of the workaholic deteriorates and the lonelier they get, which leads to personality changes and burn-out (Andreassen, 2014).

In our research, we looked for a walk of life where the relationship between Machiavellianism

and the theory of time perspective is presumably present and can be examined. We found that work was the field where both Machiavellian behaviour and time orientation could be examined properly.

# **Our Hypotheses**

The main aim of the research is to examine to what extent future-conscious people resort to influence and to what extent they neglect relationships to reach their goals. We also focus on those who do not worry about future (and rather enjoy every moment of life) and to what extent they use tricks of influence and are addicted to work.

- 1. Future-oriented individuals are heavily Machiavellian and addicted to work (H1).
- 2. Present-hedonistic individuals are heavily Machiavellian and not addicted to work (H2).
- 3. We do not expect to find a relationship with the dimensions of work addiction in the case of past-negative individuals (H3).

# **Participants**

200 respondents (115 women and 85 men) took part in the research. The youngest respondent was 18, while the eldest was 63 (average age = 38,20 SD=13,59). The participants were chosen randomly. They were given written information before the research. Anonymity was assured, (we treated the data confidentially and only used it for scientific analysis). We complied with ethical rules throughout the research.

## **Instruments**

The research was questionnaire-based and took approximately 20 minutes to be completed online. Three research instruments were used:

1. The 15-item Machiavellian Personality Scale (hereafter MPS) (Talmácsi, Orosz, Birkás and Bereczkei, 2012) which has four dimensions measuring on a 5-point Likert-type scale (1: strongly disagree, 2: disagree, 3: neither agree nor disagree, 4: agree, 5: strongly agree). The four dimensions of the questionnaire are the following: amorality, sense of

- control, desire for control and distrust of others.
- 2. The Zimbardo Time Perspective Inventory (hereafter ZTPI) (Orosz, Dombi, Tóth-Király and Roland-Lévy, 2015) which consists of 17 items and has 5 dimensions. It also uses a 5-point Likert-type scale (1: strongly disagree, 2: disagree, 3: neither agree nor disagree, 4: agree, 5: strongly agree). Its five dimensions are the following: past-positive, past-negative, present-hedonistic, present-fatalistic and future-oriented.
- The Bergen Work Addiction Scale (Orosz, Dombi, Andreassen, Griffiths and Demetrovics, 2015) which categorizes and measures personality based on seven dimensions, using a 5-point Likert-type scale (1: never, 2: rarely, 3: sometimes, 4: often, 5: always). Its seven dimensions are the following: salience, tolerance, mood modification, relapse, withdrawal, conflict and problems. We used the shorter Hungarian item set instead of the Norwegian one for our research since the psychometric indicators of the test had better results than the original Norwegian questionnaire (Orosz, Dombi, Andreassen, Griffiths and Demetrovics, 2015). Besides the questionnaire, we obtained demographic data from the respondents as well, and asked them to indicate their gender, educational background, marital status, place of residence, age and the time they spend on entertainment and how they assess their health.

SPSS 20.0 statistics programme was used for data analysis. We examined the relationship between the questionnaires filled with correlation analysis. In accordance with our hypothesis, we looked for a relationship between the Machiavellian personality and the time perspectives. We assumed that there was a relationship between time perspectives and work addiction, then we reused the same examination method between work addiction and Machiavellianism. We performed Pearson's correlation analysis between the dimensions of the three instruments and highlighted the respondents' health (How would you rate your health?) out of the demographic questions and analysed the answers as an extra item so that we could examine the relation between the dimensions, the direction of the relationship (-1 <p < 1) and the correlation coefficients of health.

#### **Results and Discussion**

We structured the relationship of Machiavellianism and time perspectives based on dimensions. We discussed time perspectives together for the sake of easier understanding, while discussing Machiavellian dimensions one by one. We will also cover the correlative relationship between marital status and education.

#### The Dimension of Distrust of Others

We performed a correlation analysis regarding the first dimension of the Machiavellian Personality Scale and the five dimensions of time perspectives. Results showed that there was a connection between past-negative dimensions and the distrust of others (r(200) = 0.148; p < 0.036). This leads us to the conclusion that distrust is typical of negative-past oriented people. There is medium correlation with the present-fatalistic dimension (r(200) = 0.265; p < 0.000). Inverse correlation was found between the past-positive dimension and the dimension of distrust of others (r(200) = -0.324; p < 0.000) and weak, inverse relationship was found with the future time dimension (r(200) = -0.272; p < 0.000). The two inverse relationships show that the more the past-positive orientation is characteristic of someone, the more they trust others, just like the future-oriented. Significant relationship was not revealed between the dimensions of future orientation and work addiction. Thus, our results are in accordance with the statement saying Machs manipulate others really well. However, they worry about falling victim to manipulation which makes it difficult for them to trust others. Not only do they doubt others but they also assume the worst as regards the intentions of others (Talmácsi, Orosz, Birkás and Bereczkei, 2012).

# Amorality, the Dimension of Amoral Manipulation

This dimension includes those phenomena that prove that Machs can influence others based on information gathered through observation, and behave morally flexible when making a decision (Birkás and Csathó, 2015). Two middle strong, inverse correlations were revealed between time

dimensions and the dimension of amorality and between the past-positive dimension (r(200) = -0.315; p < 0.000) and the future dimension (r(200) = -0.415; p < 0.000). Furthermore, there is a negative correlation between the dimension of amorality and salience (r(200) = -0.390; p < 0.000). Based on these results we can conclude that negative-past oriented people can comply with moral rules if it is necessary and beneficial for them, but it is not inherent in their personality. The two negative relationships may refer to the fact that past-positive and future-oriented people live by moral standards. Therefore, they strive to comply with the rules in all circumstances.

#### **Desire for Control**

Former researches have revealed that Machs consider others a source of risk. Therefore, they wish to keep personal situations under their control, so the dimension of desire for control measures the desire for dominant positions (Birkás and Csathó, 2015). Middle correlation was revealed with the present-hedonistic dimension (r(200) = 0.359; p < 0.000). Furthermore, a negative, weak correlation was found between the dimension of future and desire for control (r(200) =-0.205; p < 0.004), and there is a negative relationship with the present-fatalistic dimension (r(200) = -0.196; p < 0.005). Significant correlation with the questionnaire on work addiction was not revealed. We found that present-hedonistic people want to gain control to reach their goals. Past-positive people do not have a desire for control due to their trust and positive attitude while future-oriented people do not have a desire for control because they instinctively control their own environment according to their own purposes.

#### The Dimension of Sense of Control

Machs think most life events are influenced by external factors. Accordingly, they assess their success and sense of control externally, i.e. their satisfaction depends on wealth, influence and status. Therefore, this dimension measures the need for accumulating the visible indicators of success (Talmácsi, Orosz, Birkás and Bereczkei,

2012). The correlation analysis of time dimensions has revealed the relationship with presentfatalism (r(200) = 0.378; p < 0.000), and there was a negative, weak correlation with the present-hedonistic dimension ( $r(200) = -0.16\overline{1}$ , p < 0.022). Furthermore, a weak correlation was found with the problems dimension of the questionnaire on work addiction (r(200) = 0.210, p < 0.003). This may refer to the fact that if present-fatalistic people are born into favourable circumstances, they will not give it up, rather consider their status as predestined and do nothing to achieve that. They save money and do not spend on entertainment. Because of being anti-regulatory, the more hedonistic-oriented a present-hedonistic person is, the less they feel control and the more they entertain.

# Relationship of Time Dimensions and the Dimension of Work Addiction

Since pessimism is characteristic of the past-negative dimension, we did not expect a correlation with the dimension of work addiction. However, two relationships were revealed. A positive, weak correlation with the dimension of mood modification (r(200) = 0.262; p < 0.000), which may refer to the fact that past-negative people do not really excel in their work and are moody. Furthermore, in the case of the dimension of withdrawal, a positive, weak correlation was found (r(200) =0.155; p < 0.028). Findings about the presenthedonistic dimension may refer to the fact that there cannot be a correlation between the dimensions – since work and responsibility are uncharacteristic of hedonism. This was justified by a statistical analysis, i.e. there is not a significant correlation between work addiction and present hedonism.

According to preliminary expectations, past-positive people choose a job that is related to the past or cosy since they feel good in that kind of environment. They work because of memories. They are probably good and reliable colleagues who perform their tasks excellently, their colleagues can rely on them and if they cannot work in a satisfying work environment, they feel bad. This hypothesis was proven by our research: there is a weak significant correlation between salience and work addiction (r(200) = 0.160; p <

0.024) and there is a weak correlation between the dimension of withdrawal and work addiction (r(200) = 0.201, p < 0.004). As for the futureoriented dimension, we assumed it to be a part of a workaholic's personality since future-oriented people appreciate work because it is the key to a successful future. Our analyses found a weak correlation with the dimension of salience (r(200) = 0.330; p < 0.000), tolerance (r(200) = 0.237; p < 0.001) and withdrawal ((200) = 0.268; p < 0.000). Furthermore, we revealed a negative match with the dimension of conflict (r(200) =0.171; p < 0.015). These results may refer to the fact that future-oriented people like excelling in their work since their perfectionist personality demands this. Correlative results proved that future-oriented people are tolerant towards their work – which so they have confirmed our hypothesis (since this personality gradually increases their workload). This assumption is also proven by the positive correlation with the dimension of withdrawal. Based on the features of the presentfatalistic dimension we assumed that the belief in fate did not lead to good performance, therefore we did not expect the result to be seen on the scale of work addiction. The research revealed a positive correlation with the problems dimension (r(200) = 0.218, p < 0.002). This may refer to the fact that the person tries to stand out but always relapses (therefore, they are stagnant). We suppose that the correlation with the dimension of problems confirms this.

# The Relationship of Work Addiction and Health

After comparing the dimensions of work addiction with the dimensions of time and Machiavellianism, we wanted to know whether or not work addiction affected health. Our aim was to prove this statement from the point of view of Machiavellianism and time. Therefore, we carried out a statistical research into health and dimensions. Respondents assessed their health as follows.

Our research has revealed that there is a negative and weak correlation between the dimension of relapse and health (r(200) = -0.165; p < 0.020). Furthermore, there is a weak, negative connection between the dimension of problems and health (r(200) = -0.203; p < 0.004). In the case

of dimensions, significant correlation was found between sense of control, past-negative and present-fatalistic dimensions. The Machiavellian dimension showed negative correlation (r(200) =-0.221; p < 0.002). In case of time dimensions, the past-negative orientation showed a weak, inverse correlation (r(200) = -0.199; p < 0.005). Furthermore, a weak relationship was revealed between present fatalism and health (r(200) =-0.197; p < 0.005). Based on these results we can assume that the deeper the workaholic relapse into their addiction, the more their health deteriorates. We also assume that the health of Machs having a strong sense of control gradually worsens. Similar results were revealed in the case of time dimensions because the weak, negative correlation assumes that past-negative and present-fatalistic people can become unhealthy depending on their excessive time orientation. These results raise the question whether or not the representatives of these personality structures and dimensions die earlier (since their health deteriorates quicker than others).

#### **Outlook and Limitations**

The results of the research are not representative. However, it is planned to check the preliminary results with an expanded pool of respondents and explore the relationships thoroughly.

According to our first hypothesis, excessively future-oriented people are workaholics and have a Machiavellian personality. We expected to find a strong correlation between the dimensions of sense of control and desire for control on the Machiavellian scale, while in the case of the guestionnaires on future orientation and work addiction, we expected to confirm a strong relationship between the dimensions of relapse, conflict and problems. The lack of correlation can be explained by the fact that future-oriented people do not have a desire for control since they are able to maintain (and therefore feel) it anyway. In the case of work addiction, future-oriented people do not consider work a problem because work is natural for them. Because of this they do not experience a sense of conflict. However, our research has revealed a weak correlation between the dimensions of tolerance, salience and future orientation, so future-oriented people can cope with enormous workloads and stand out from their colleagues by hard work. The correlation with the dimension of withdrawal may refer to the fact that future-oriented people are workaholics, since they feel uneasy if they cannot work (meaning that Machiavellianism is not typical of future-oriented people). They are reliable and manage to deal with huge workloads.

According to our second hypothesis, presenthedonistic people are not workaholics and have a Machiavellian personality. Based on our hypothesis we expected to find a strong correlation between the scales of Machiavellianism and present-hedonism. Our research has not revealed a correlation between the scale of distrust of others and the scale of amorality. The characteristics of the present-hedonistic time perspective may be the reason for this – since these people are open, trust others and their acts are driven by emotions. Sometimes they do not follow the rules. Therefore, we could not find a correlation. However, we have found a relationship in the case of desire for control. These people prefer entertainment and look for pleasure (therefore, they feel uneasy if they are supposed to act differently). Negative correlation was confirmed with the sense of control factor, that is, the less they feel the control, the more present-hedonistic they are. When examining the questionnaire on work addiction, we did not recognise a significant correlation with the present-hedonistic personality (which should not come as a surprise since hedonists seize the day and prefer entertainment).

According to our third hypothesis, there should not be a correlation between past-negative people and the dimensions of work addiction (since pessimism is typical of past-negative people, therefore it is not sure that they are work addicts). However, research results have revealed a relationship between two dimensions, i.e. mood modification and withdrawal. This may refer to the fact that if excessive past-negative people feel good, they enjoy working but feel uneasy if they are interrupted it for some reason. Furthermore, it can be a means of escape for them to hide from their problems. Based on the results we can say that the level of mood modification influences the presence and extent of addiction.

Our research has revealed several interesting results which call for further examination, interpretation and exploration. For example, the dimension of sense of control shows negative correlation with health. It is possible that people who always have a control over their environment schedule less "me time" and health preservation time (Birkás and Csathó, 2015). In the case of time orientation, the weak past-negative and the strong present-fatalistic orientation may refer to the fact that the health of these people is going to deteriorate. It would be worth expanding and examining the topic of health in the light of Machiavellianism and time orientation to get a clearer picture of the relationship of these three factors.

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