



Personality of elite male and female chess players and its relation to chess skill

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ABSTRACT

Whereas a lot of studies examine cognitive processes in chess players, personality profiles of elite chess players are still not described well. The aim of this study was to examine personality of strong chess experts and its influence on chess skill. We tested elite male and female chess players with Freiburg Personality Inventory Revised (FPI-R), which also provides population norms for males and females. Elite male players' personality profile did not significantly differ from the population norms. Female players were more satisfied with life, had less physical complaints and higher achievement motivation in comparison with female population norms. Personality was also related with chess skill but showed different patterns in males and females. Stronger male players were more introverted, while we found the opposite pattern in female players. These results indicate that personality plays an important role in the highest level of complex intellectual activities.

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1. Introduction

In folk psychology, the typical elite chess player is seen as an introverted, shy but intelligent male person who prefers playing chess or reading chess books instead of outdoor or social activities (Krogus, 1976). Although this assumption has received some empirical support (e.g., Kelly 1985; Stevens & Olmo, 1984), we still do not know much about personality profiles of elite chess players. Our study investigated personality factors of highly skilled male and female chess players and their association with chess skill.

The few personality studies among chess players demonstrated increased introversion scores in chess players (Kelly 1985; Stevens & Olmo, 1984) as well as higher scores on unconventional thinking, orderliness and suspiciousness (Avni et al., 1987) compared to non-chess players. Children who pick up chess as a hobby are more likely to be extraverted, conscientious, and open to new experience than chess non-playing children (Bilalić et al., 2007b). None of these studies, however, could establish a significant relation of personality to chess skill. Grabner et al. (2007), for example, found that none of the broad personality measures significantly contributed to the explanation of chess performance. Bilalić and colleagues showed that there are personality differences in the children who decide to take up chess as a hobby and those who do not, but personality could

not reliably predict chess skill among chess playing children. The above findings indicate that the common observation of laymen about elite chess players as socially withdrawn people may be wrong. Finally, if strong chess players would be socially withdrawn persons, we would expect better players to be more introverted and have lower scores on the factors on social competence than their weaker colleagues. This conclusion would be premature because none of the above mentioned studies examined elite chess players. Our study examined personality profiles of male elite chess players with the revised Freiburg Personality Inventory (FPI-R; Fahrenberg et al., 1994). In particular, if the common assumption about the shy, introverted, and socially clumsy elite chess player is true, we would expect deviations from the population norms on several personality factors. One could assume that in comparison with normal population elite players will have less pronounced extraversion trait (factor Extraversion) and would be socially inhibited (factor Inhibition). Similarly, if there is a link with chess skill, we could also expect that some of the above mentioned personality factors will also be related to chess skill.

An additional aspect of our study is that we also included a small sample of elite female chess players, who are minority in this traditionally male domain and almost absent at the highest level. We were thus able to examine how women who are successful in a male domain differ in respect to personality from the female population norms. Finally, we were also interested whether the pattern of association between chess skill and personality will remain the same in the minority female group as it is in the majority male group.

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2. Method

2.1. Participants

We examined 30 male (Mean age \pm standard deviation; 30.3 ± 7.6 y, range 18–46 y) and 10 female chess players (Mean age 31.9 ± 12.7 y, range 20–63 y). There were no age differences between the two groups of players. Players were recruited during German championship tournaments and German national league (“Bundesliga”) matches in the years 1999 until 2001. Chess skill is based solely on the performance against other players and is expressed by Elo rating – an interval scale with a theoretical mean of 1500 and standard deviation of 200 (Elo, 1978). Beginners have a rating of around 500, the best players (Grand Masters) have ratings over 2500, and experts are considered all players with a rating of 2000 Elo points or more. Our male players were highly rated – on average 2362 ± 139 (range 2050–2575) – and clearly belonged to the very best players. The female players were rated by the German rating scale (Deutsche Wertungszahl – DWZ) which is based on the same assumptions as the Elo rating (the two correlate over .90 – Bilalić, et al., 2009). They had on average 1898 ± 177 points (range 1630–2189) and were a couple standard deviations above average players. The female chess players can be assigned to comparable categories as the male players because the male players on average have a few hundred rating points more than females (Chabris & Glickman, 2006). All of our participants were informally asked to fill out the questionnaire during rest periods, when they had enough time. They were randomly drawn from all players who were available in public areas near the playing hall during the rest periods. Only about 20% of the asked male and female players refused to participate in our study.

The fact that questionnaires were filled out during championships and team matches therefore could be an influencing factor on player's responses. It is known that personality measures are context-dependent (Wood & Roberts, 2006; Matsumoto, 2007) – extraversion, for example, is modulated by stress and arousal levels (Eysenck, 1981). The championships and tournaments where the players were tested are, however, a standard context for these elite players. We can thus assume that the personality estimates are probably more reliable than they would be in another context. It should be also noted that less than 10% of the total variance of the extraversion scale was found to be explained by situational and/or interactional effects in the FPI-R (Deinzer et al., 1994).

One could also argue that the size of our samples was not particularly big, but one should keep in mind that our participants are truly exceptional. To put the quality of our sample into the perspective, one should consider that there are about 60,000 active players rated in Germany, out of which only around 5% are women. Our average male participant is more skilled than 99.6% of all male players (there are only around 250 players better), while our average female player is more skilled than 94.5% of all female players (there are only around 150 players better; all information drawn from the database on <http://www.schachbund.de>).

It should also be noted that age was not significantly correlated with chess rating, neither in males nor in females.

2.2. Materials

We administered Freiburg personality inventory (FPI-R; Fahrenberg et al., 1994) to the players. FPI-R is a personality questionnaire with 138 forced choice (yes/no) items, which has been frequently used in German-speaking countries (Clayton et al., 1994; Hehl & Ruch, 1985; Merikangas et al., 1993; Thomas & Kirkcaldy, 1988). FPI-R measures the following 12 personality traits: life satisfaction (e.g., overall satisfaction, good mood, positive attitude), social orientation (e.g., altruistic, ready to help, emphatic), achievement orientation (e.g., achievement motivated, ambitious, competitive), inhibition (e.g., socially unsure, afraid of contact), excitability (e.g., sensitive,

not controlled), aggressiveness (e.g., spontaneously aggressive, stubborn), stress (e.g., strained, overloaded, burned out), somatic complaints (e.g., health complaints), health concerns (e.g., looking after self, health conscious), frankness (e.g., self-criticism, nonconformity, unorthodox), extraversion (e.g., sociable, impulsive), and emotionality (e.g., emotionally unstable, fearful). FPI-R is modelled after the classical questionnaires (Cattell & Nesselroade, 1966; Eysenck, 1952; Guilford, 1959) and is a highly reliable and valid personality questionnaire (Fahrenberg et al., 1994; Ostendorf, 1997; Stieglitz, 2002). Four of the “Big Five” (BF) personality factors are covered by the subscales of the FPI-R (Borkenau & Ostendorf, 1989): the factor neuroticism in BF is represented by life satisfaction, excitability, stress and somatic complaints in FPI-R. The BF extraversion is highly positively associated with the FPI-R extraversion and highly negatively with the FPI-R inhibition. The BF agreeableness is covered by the subscales social orientation (positive direction) and aggressiveness (negative direction) in FPI-R. The BF conscientiousness positively correlates with the FPI-R achievement orientation.

Most importantly, it is standardized on a representative German sample of over 2300 people (Fahrenberg et al., 1994), which enables us to compare the personality profiles of male and female strong chess players to the population personality profiles. We transformed the raw values of FPI-R into age and sex corrected stanine (“standard nine”) scores for German adults. Stanine is a 9-point scale with the mean of 5 and standard deviation of 1.96.

2.3. Statistical analysis

To explore whether the personality scores of male and female strong players are different from the population norms, we conducted one sample *t*-tests. For the differences between male and female players in personality traits we used independent sample *t*-tests. The association between personality traits and chess rating was examined using bivariate correlations separately for male and female players. Using nonparametric statistical tests produced similar results. We should stress that we did not use a correction for multiple tests because we were specifically interested in the assumption that best chess players are socially withdrawn people. This requires just a couple of comparisons (extraversion and inhibition factors). All other comparisons did not follow any specific prediction and can be considered as exploratory in nature. Future studies, with larger samples, may provide more conclusive answers regarding these indications.

3. Results

Personality profiles of male and female players are displayed in Fig. 1. In male chess players none of the personality traits was significantly different from the population average (i.e., stanine mean of 5). Female players were more satisfied with life (life satisfaction – $t(9) = 6.0$, $p < .001$), exhibited higher achievement orientation ($t(9) = 2.7$, $p = .026$), and reported less physical complaints ($t(9) = -2.4$, $p = .040$) than the population.

The high life satisfaction and achievement orientation scores in female chess players are also reflected in the sex differences on these two personality factors. Female players were more satisfied with life ($t(38) = 2.3$, $p = .03$) and had showed higher achievement motivation ($t(38) = 2.8$, $p = .007$) than male players. The difference on the life satisfaction factor was not related with the norms as the same pattern is found when the raw scores were used. The achievement orientation, however, did not quite reach the significance level when the raw scores were used.

Fig. 2a shows that in males, stronger chess players tend to be more introverted than their weaker colleagues. This is reflected in a significantly negative correlation between extraversion and rating ($r(28) = -.40$, $p = .029$). Chess skill in male players was also correlated

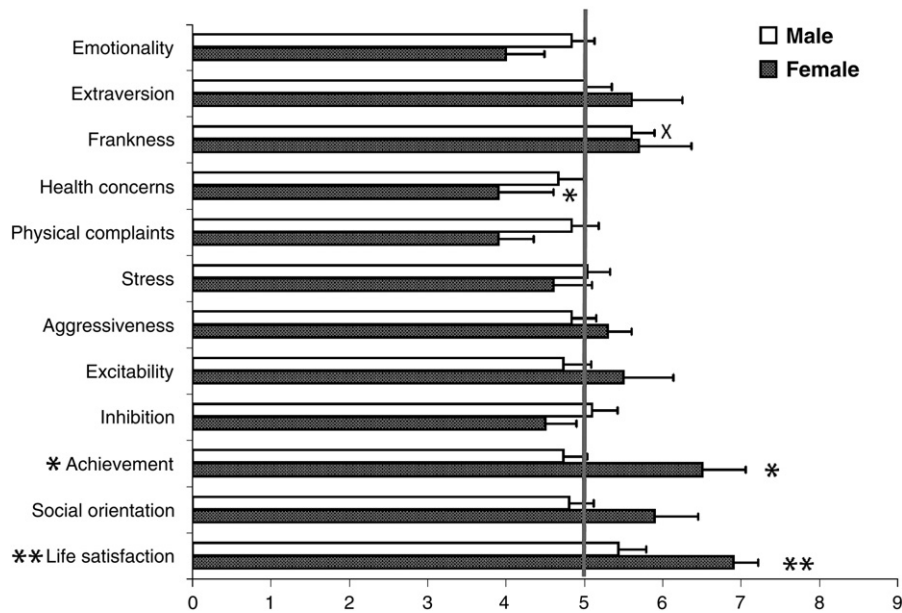


Fig. 1. Personality scores in male and female chess players. Error bars represent standard errors of the mean. The vertical line on x-axis at value five shows the population mean. The significant difference between males and females are labelled at the left side just before the personality factor names. The significant difference between male and female scores and their norms (vertical line at five) is displayed next to the male and female values. ** $p < .001$, * $p < .05$, $\times p = .053$.

with stress – stronger players tended to be less stressed (Fig. 2b, $r(28) = -.35$, $p = .055$). In contrast to male players, we found that better female players tend to be generally more extroverted than their weaker female colleagues (Fig. 2c, $r(8) = .60$, $p = .065$). This difference seems not to be a consequence of skill difference among males and females, because although there was no correlation among skill and extraversion in the ten weakest male players (Melo = 2206 ± 72), the association was still in the same direction as in the whole male group – ($r(8) = -.26$, ns).

Stronger female players also were less inhibited (Fig. 2d, $r(8) = -.66$, $p = .038$) and more aggressive (Fig. 2e, $r(8) = -.731$, $p = .016$) than their weaker female colleagues.

4. Discussion

We could not confirm the common assumption about elite chess players being different than the normal population. Strong male chess players did not show substantial deviations of their personality in

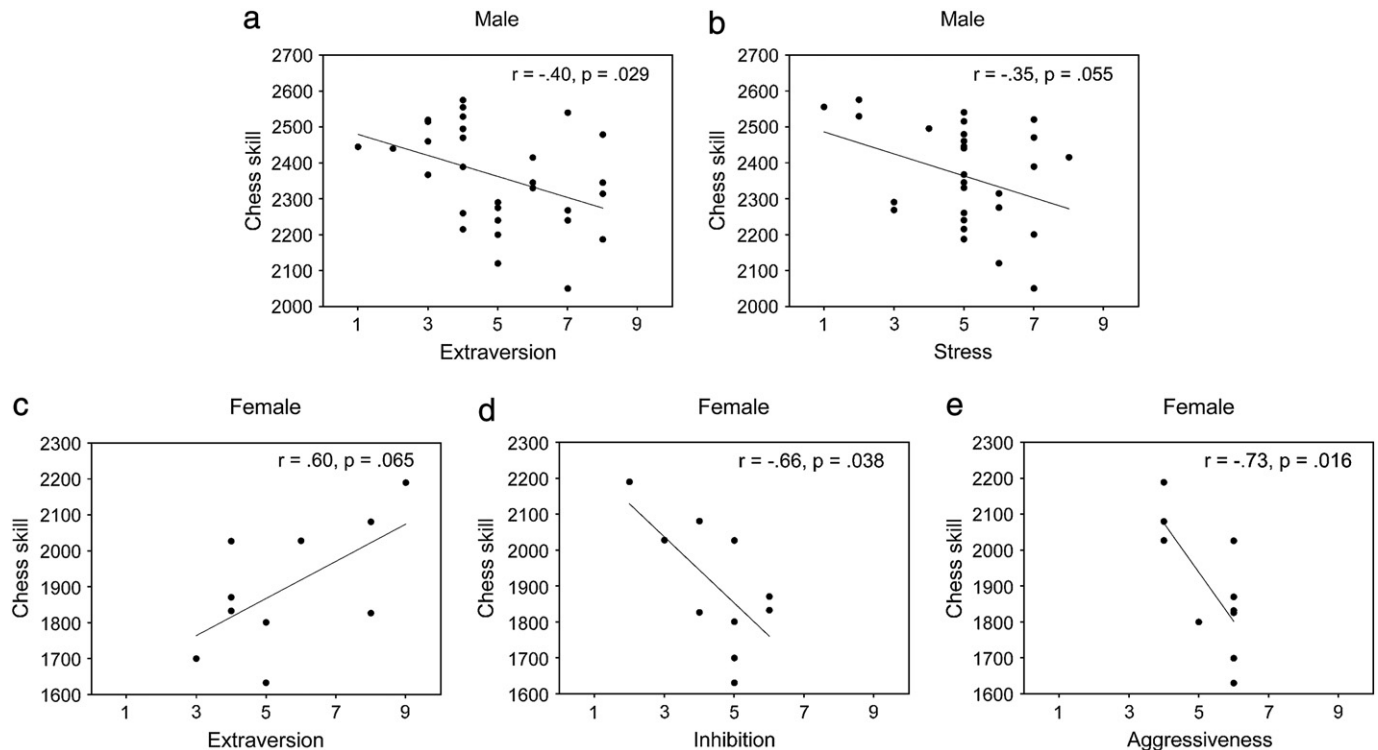


Fig. 2. Scatter plots of the personality and chess skill in male and female elite players. a) Extraversion and chess rating in male elite chess players; b) stress and chess rating in male elite chess players; c) extraversion and chess rating in female elite chess players; d) inhibition and chess rating in female elite chess players; and e) aggressiveness and chess rating in female elite chess players.

comparison with male population norms. In contrast, female chess players displayed even more positive personality traits than the normal female population. They were more satisfied with their lives, displayed higher achievement orientation, and complained less about their physical problems than the normal female population. The reasons for these differences could be the fact that chess is seen as a highly intellectual domain (Newell et al., 1963), traditionally dominated by men (Bilalić, et al., 2009; Chabris & Glickman 2006). For successful female chess players life satisfaction may be even amplified because they are successful in a particularly male dominated domain. To become a good chess player, a high achievement motivation, toughness, and stability may all be necessary. It is probably even more the case with women who compete in a male dominated activity. It is then not a wonder that elite female players have more pronounced achievement motivation than the normal female population and even more than male players.

The results on achievement orientation should be taken with a reservation. Some achievement orientation questions in the FPI-R are job-related (e.g. “My job is of more importance than leisure and interesting hobbies”). A good number of elite players do not possess a profession other than chess, which makes it difficult for them to objectively answer this kind of questions. This may also explain the surprising finding that elite male chess players do not have more pronounced achievement motivation than normal population. One would surely expect that the attainment of the highest level of expertise, which involves years and years of dedications, also requires high achievement motivation.

Although elite male players were not more introverted than the population, stronger players tended to be more introverted than their weaker colleagues (see Fig. 2a). The positive association between introversion and chess is in line with the common assumption where chess players are seen as self-absorbed people, but is in contrast with previous studies who could not find this association (Bilalić et al., 2007b; Grabner et al., 2007). These studies, however, examined either children (Bilalić et al., 2007b) or considerably weaker players (Grabner et al., 2007; Elo 1869 ± 247). Similarly, other studies found increased introversion scores in amateur and expert chess players (Kelly, 1985; Stevens & Olmo, 1984) while we could not find the difference between our elite sample and the rest of the male population. While our data indicate that a study with even stronger chess players than our sample might show a significant difference to the normal population in their extraversion/introversion, further empirical evidence is necessary to consider introversion as a significant factor in chess skill.

The question remains why an introverted personality style would be advantageous in chess. It seems plausible to assume that introverted people would find more time to invest in a single activity. Chess is a complex activity that requires years to be mastered (Bilalić et al., 2007a; Simon & Chase, 1973). Finally, it is conceivable that people immersed in chess become introverted because success in chess requires certain personality traits.

In contrast, stronger female players tended to be more extraverted, were less inhibited in social contact, and less aggressive than their weaker female players. The factors of extraversion and inhibition are related and a high score on extraversion is usually accompanied by a low score on inhibition. The opposite association between chess skill and inhibition/extraversion among female players may look surprising at first sight. Again, we need to take into consideration the fact that chess is a domain populated and dominated by men. It is difficult to a woman who is socially shy and introverted to become a chess player in the first place. We can also assume that women who have to maintain their position in a male domain have to be extraverted. These results support the hypothesis that male and female chess players substantially differ in their personality profile.

Although chess can be regarded as an aggressive game because it is a battle between two people, one could assume that strong players

should control their behaviour to achieve good results. Impulsive and not thought out decisions in chess regularly lead to a loss. This may explain why stronger female players tend to be less aggressive than their weaker colleagues.

Similarly, a clear head is needed in chess where a game can last for several hours and a moment of inattention can spoil hours of hard labour. Only chess players who can work under pressure and are not strained can hope to become successful professional players. In our sample the players with high ratings are more likely to earn their living with chess mainly, whereas weaker players in our sample probably regard chess as their hobby. Therefore it is not surprising that especially the players with the highest skill have to be good in coping with stress when doing their “chess work” because of their uncertain incomes. The correlation between skill and stress scores is in the same direction as the correlation between skill and extraversion, which is in line with an effect of extraversion on psychological and physical strain (Grant & Langan-Fox, 2007).

Our study is the first examination of personality profiles of exceptionally strong chess players. Although our results can be seen as preliminary given the sample size, we could gain several important insights. Strong chess players do not seem to be social eccentrics with deviant personality as they are often seen (Krogius, 1976). Female players even had more desirable personality profiles than the female norm population. We did, however, find evidence that the very best professional male chess players prefer self-absorbing instead of social or outdoor activities. Most interesting finding, in our opinion, is the gender difference in the contribution of personality factors to chess skill. Personality factors that seemed to be irrelevant for chess skill in males were important among best female players. Being minority in a domain may result in a completely different pattern of the relevant personality traits than when a person is in majority.

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