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## Casual Go players among university students in Europe and East Asia: Numbers and Characteristics

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### Abstract

Little is known empirically about casual Go players. Their numbers are difficult to estimate and there are no systematic studies about their characteristics (demographics, personality, intelligence etc.). We use data from an international survey among university students including all major Go nations besides Korea (China, Taiwan and Japan) and additional three other countries (Germany, Estonia and Vietnam) to estimate the size of the casual player base and their main characteristics. We find a surprisingly large number of casual players also in countries where Go is not traditionally played. Moreover, we find high masculinity as the strongest predictor for casual Go players while demographic and personality variables are not significant.

**Keywords:** Go, Baduk, Weiqi, international players, survey

# 1. Introduction

The board games Go (also known as *weiqi* or *baduk*) and chess are among the most widely played strategic games, with long histories and large player communities. Go originated in China and remains especially popular in China, Korea, Japan and Taiwan. Precise global participation numbers are difficult to establish, surveys and academic studies suggest that Go has a substantial but regionally concentrated player base. Estimates indicate that the global number of Go players is around 100 million (Rieger and Wang, 2021), including both regular and occasional players, mostly located in China, Korea and Japan.

In contrast, chess shows a much broader global diffusion. According to the Fédération Internationale des Échecs (FIDE), approximately 600–605 million people worldwide know how to play chess, based on YouGov survey data (FIDE, 2012). Among them, around 1.64 million players are registered on the FIDE rating lists (Friedel, 2025). Chess federations and online platforms provide organized structures for play across almost every country, making it a useful benchmark for comparative studies of strategic game participation.

In East Asia, Go coexists with other traditional strategy games. Xiangqi (Chinese chess) is widely played in China, with market research reports estimating around 300 million people familiar with the game (PMarketResearch, 2021) and approximately 10 million active enthusiasts (XiangqiWu.com, 2023). Shogi (Japanese chess) is similarly embedded in Japanese culture. Estimates of the number of shogi players in Japan range from about 6.2 million (Tansey, 2021) to roughly 10 million playing at least annually (Japan Policy Forum, 2016), with survey-based participation rates suggesting around 3% of the Japanese population plays shogi (Statista, 2022). Historical data indicate

that the number of players has fluctuated between 8.4 and 16.8 million over the past decades (Japanese Productivity Center, 2006).

Despite these broad figures, quantitative comparisons of board game engagement among specific demographic groups remain limited. University students are a particularly important population for such research because they represent the young generation whose cultural preferences and leisure activities may reflect broader trends in strategic game participation. Estimating the size of the Go-playing population among university students in selected East Asian and European countries, and comparing it with chess participation within the same cohorts, can provide insight into patterns of game adoption, cultural diffusion, and cognitive engagement in competitive strategy games.

There is another difficulty that is noticeable in the wide ranges of estimates stated above: The difficulty of defining what constitutes a “player” of a game like Go. This can be seen from an older comprehensive and representative survey in Germany from the year 2004 (Grootenhuis, 2004): It indicates that around 20 million Germans had heard about Go, 3 million Germans have played Go at least once, 750,000 play it “from time to time”. At the same time, only around 2000 persons were members of the German Go Association or one of its sub-organizations. Depending on how we define a “Go player”, their numbers can therefore vary easily by a factor of more than 1000. There is no reason to assume that the differences in other countries or other comparable games would be smaller.

Numbers of Go players, particularly of young ones, are informative as they can help to predict the future potential for the game in certain countries. There are, however, other interesting details to know about Go players than only their total numbers. In particular, there is a severe lack of empirical data on demographic characteristics and typical properties of Go players (e.g.,

regarding their personality, their intelligence, etc.). Rieger and Wang (2021) studied some of these properties for European tournament players and found that they excel particularly in cognitive reflection, even compared to chess players that had previously been found to have large values (Campitelli and Labollita, 2010). When it comes, however, to the big majority of Go players who are not participating in tournaments and are not members of a Go association, there is even less known. Our study tries to shed some light on this by using data from a large-scale survey among university students.

## 2. Method

We used data from the PANDA study (Preferences, Attitudes, Norms and Decisions in Asia), conducted in the years 2018 and 2019 in several countries of East Asia (China, Taiwan, Japan and Vietnam) and Europe (Germany and Estonia). While three of these countries are traditional strongholds of Go, the three others have a much smaller Go tradition and community.

The survey was advertised at several universities and in total  $N = 2510$  subjects participated in it and answered the questions about Go. Most of the participants were university students. More about the methodology of this survey can be found in Tian et al. (2021) and Wang et al. (2023).

The survey contained the following items relevant to this study regarding games:

- To measure participants' familiarity with and recent engagement in mind games, respondents were asked to indicate which of the following **games they had ever learned the rules of** and which they had **played in the past 12 months**. Options included Chess (changed to Xiangqi in Chinese and

Shogi in Japanese), Go, and an open-ended category for other similar mind games.

To assess cognitive reflection, we administered a set of free-response questions adapted from the classic Cognitive Reflection Test (CRT) and extended items used in prior research. The original CRT was developed to capture the tendency to override an intuitive but incorrect response in favor of a more deliberative one (Frederick, 2005). In this study, participants responded to the six CRT items as follows:

1. A pen and an eraser cost 1.10 Euro in total. The pen costs 1.00 Euro more than the eraser. How much does the eraser cost?
2. If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?
3. In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?
4. If you're running a race and you pass the person in second place, what place are you in?
5. A farmer had 15 sheep and all but 8 died. How many are left?
6. Laura is 10 years old. Her father has three daughters. The first two are named April and May. What is the third daughter's name?

*(For Chinese and other language versions, gendered proper names in item 6 were adapted to culturally appropriate equivalents.)*

The first three items are direct adaptations of the original CRT developed by Frederick (2005), which has been widely used as a measure of reflective versus intuitive thinking in judgment and decision-making research. The latter three items are structurally similar “intuitive lure” problems commonly used in extended CRT batteries and alternative forms (Thomson et al., 2016),

each eliciting an intuitive but incorrect response unless reflective processing intervenes. These items were presented in free-text response format to allow for open coding of answers.

- The classical Hofstede cultural dimensions Individualism (IDV), power distance (PDI), masculinity (MAS) and uncertainty avoidance (UAI), see Hofstede (2011).
- The Big5 personality dimensions, measured as in Rammstedt and John (2007).

### 3. Results: number of players

**Table 1:** Percentage of students answering “Yes” to learning and playing board games by country

Category	JAP	CHN	TWN	VNM	GER	EST
Learned chess (%)	77	74	85	56	84	69
Learned Go (%)	29	35	42	23	10	18
Learned other abstract board games (%)	26	26	14	53	23	24
Played chess in past 12 months (%)	65	53	56	40	59	50
Played Go in past 12 months (%)	16	17	18	13	5	15
Played other board games in past 12m (%)	34	41	36	59	40	40

**Table 1** summarizes the proportion of university students who reported having learned and played chess, Go, and other abstract board games across the six countries. As expected, chess (or its regional variant xiangqi and shogi) was the most widely learned and played game in all surveyed countries, with particularly high learning rates in Taiwan (85%), Germany (84%), and Japan (77%).

In contrast, Go showed substantial cross-country variation: While in the classical Go countries China, Taiwan, and Japan 29%–42% reported having learned Go before, in Vietnam 23%, in Estonia 18%, and in Germany only 10% had. The differences, however, are less clear-cut than one might have expected previously. In particular, the fairly high percentage among university students in Vietnam and Estonia is surprising.

Recent playing behavior showed similar trends. While Go was played by a smaller share of students than chess in all countries, recent Go play was reported by 13–18% of respondents in Vietnam, China, Taiwan, Japan, and Estonia, compared to only 5% in Germany. Again, Vietnam and Estonia stood out, as their rates of recent Go play were comparable to those observed in East Asian countries.

It is interesting that the gap between “having learned” and “played within the recent 12 months” was much wider in the classical East Asian Go nations. A reason is probably that there it is more common that children learn Go early on and then might eventually drop it if they do not like it, whereas, e.g., in Europe many encounter Go first at university when they are older and might therefore have a better ability to assess whether the game will be interesting for them before learning it.

## 4. Results: characteristics of Go players

In this section, we study how persons who have played Go at least once and persons who regularly play Go differ from the rest of the sample. To this end, we conduct regression analyses where we use the Go playing status as dependent variable and as independent variables gender, age, bachelor degree, Hofstede cultural dimensions, cognitive reflection score, and the Big5 personality dimensions.

**Table 2:** Dependent variable: Has learned Go

Independent Variable	Standardized $\beta$	p-value
Bachelor degree	0.014	0.532
Age	-0.011	0.591
Female	-0.026	0.212
<i>Hofstede dimensions:</i>		
Individualism Index	0.025	0.226
Power Distance Index	0.000	0.997
Masculinity Index	0.065**	0.002
Uncertainty Avoidance Index	-0.077***	<0.001
Cognitive reflection score	0.021	0.327
<i>Big Five Personality Dimensions:</i>		
Extraversion	-0.034	0.097
Agreeableness	-0.016	0.439
Conscientiousness	-0.039	0.062
Neuroticism	-0.006	0.763

Openness	0.053**	0.009
Country controls	yes	

\*Notes: Standardized coefficients reported.  $p < 0.01$ ,  $p < 0.001$ .

Table 3: Dependent variable: Played Go in the past 12 months

Independent Variable	Standardized $\beta$	p-value
Bachelor degree	0.026	0.267
Age	-0.014	0.527
Female	0.001	0.981
<i>Hofstede dimensions:</i>		
Individualism Index	-0.001	0.944
Power Distance Index	-0.037	0.096
Masculinity Index	0.086***	<0.001
Uncertainty Avoidance Index	0.002	0.926
Cognitive reflection score	-0.066**	0.003
<i>Big Five Personality Dimensions:</i>		
Extraversion	-0.003	0.893
Agreeableness	-0.028	0.199
Conscientiousness	-0.004	0.853
Neuroticism	-0.028	0.200
Openness	0.015	0.467
Country controls	yes	

\*Notes: Standardized coefficients reported.  $p < 0.01$ ,  $p < 0.001$ .

The two models capture two sequential stages of engagement with Go: first, learning Go, and second, continued engagement, as indicated by having played Go in the past 12 months. All cultural dimensions are measured at the individual level, reflecting respondents' personal cultural orientations rather than country-level averages.

At the first stage (learning Go), basic sociodemographic characteristics (education, age, and gender) are not significantly associated with the likelihood of learning Go. Among individual-level cultural orientations, masculinity is positively related to learning Go, while uncertainty avoidance is negatively related. Given that the masculinity dimension partly reflects competitiveness and achievement orientation, this finding suggests that individuals with a stronger competitive orientation are more likely to take up Go in the first place, whereas individuals who are more averse to uncertainty are less likely to do so. Among personality traits, only openness is positively associated with learning Go, consistent with the idea that openness facilitates initial exploration of complex and unfamiliar activities.

At the second stage (continued engagement, i.e. having played Go in the past 12 months) masculinity again shows a strong positive association, indicating that competitive orientation remains important not only for entry into Go but also for sustained participation. In contrast, the other cultural dimensions and all Big Five personality traits are not significantly related to continued play.

Notably, cognitive reflection is negatively associated with recent Go play, suggesting that individuals with higher cognitive reflection may be less like-

ly to remain active players once the initial learning phase is completed. This result seems at first in contradiction to Rieger and Wang (2021) who showed that tournament Go players with higher playing strengths also had higher cognitive reflection scores, and in general the cognitive reflection scores of tournament Go players were exceptionally high. One potential reason for the findings among casual Go players might be that individuals with high cognitive reflection could be more curious and thus starting more often different activities, instead of sticking to one. A hint into this direction is that subjects who had learned not only Go, but also chess and other similar games tend to have a *higher* cognitive reflection than others (4.85 versus 4.40, t-test  $p = 0.002$ ).

Across both stages, gender shows no significant effect, indicating that men and women are equally likely to learn Go and to play it casually, as measured in this survey. This finding is noteworthy given the continued underrepresentation of women among tournament-level Go players, and suggests that gender disparities observed in competitive settings likely emerge after the casual participation stage rather than at the level of initial or informal engagement.

## 5. Conclusions

This article is one of the first that aims to study the broader demographic of casual Go players, instead of focusing solely on professional or amateur tournament Go players. In this way, it provides interesting insights into the approximate size and demographics of this player population.

The results highlight the importance of individual-level cultural orientations -- especially competitiveness-related masculinity -- across both stages of engagement, while demographic characteristics and most personality traits

play a limited role once cultural orientations and country controls are taken into account.

It would be interesting to broaden the analysis in future studies in order to include broader populations (not only university students). A more nuanced view on casual playing could distinguish the different types of casual players (e.g. players who only play online or those who only play within their families etc.). Finally, more direct evidence on the effect of cognitive reflection on the formation of casual players would be interesting as well.

## References

- Campitelli, G. and Labollita, M. (2010), 'Correlations of cognitive reflection with judgments and choices', *Judgment and Decision Making*, 5(3), pp. 182–191.
- Fédération Internationale des Échecs (FIDE) (2012), *How Big is Chess – World Chess Participation Estimates*, Submission to the IOC.
- Frederick, S. (2005), 'Cognitive Reflection and Decision Making', *Journal of Economic Perspectives*, 19(4), pp. 25–42.
- Friedel, F. (2025), *Chess Statistics Today*, ChessBase.com article.
- Grootenhuis, R. (2004), 'Bekanntheitsanalyse Go 2004', *Deutsche Go Zeitung*, 79(4), pp. 38–39.
- Hofstede, G. (2011), 'Dimensionalizing cultures: The Hofstede model in context', *Online Readings in Psychology and Culture*, 2(1), p. 8.
- Japan Policy Forum (2016), *Shogi and Artificial Intelligence*, PDF report.
- Japan Productivity Center (2021), *Leisure White Paper 2021*.
- Japanese Productivity Center for Socio-Economic Development (2006), *Leisure White Paper: Changes in Shogi Participation*.
- PMarketResearch (2021), *Xiangqi Market in China: Overview and Participation Estimates*.
- Rammstedt, B. and John, O. P. (2007), 'Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German', *Journal of Research in Personality*, 41(1), pp. 203–212.
- Rieger, M. O. and Wang, M. (2021), 'Cognitive reflection and theory of mind of Go players', *Advances in Cognitive Psychology*, 17(2), p. 117.
- Statista (2022), *Shogi participation rate in Japan*.
- Tansey, J. (2021), 'Amid a global chess boom, shogi eyes its own winning moves', *The Japan Times*.

Thomson, K. S., Oppenheimer, D. M. and Shane, F. (2016), 'Investigating an alternate form of the cognitive reflection test', *Judgment and Decision Making*, 11(1), pp. 99–113.

Tian, G., Wang, M., Rieger, M. O. and Block, J. (2021), 'How Do Thinking Style and Motivation Influence Household Sector Innovation? Evidence from a Cross-Country Survey', *International Review of Entrepreneurship*, 19(2).

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