

# The Role of Deliberate Practice in Expertise: Necessary but Not Sufficient

Fernand Gobet (fernand.gobet@brunel.ac.uk)

Centre for the Study of Expertise, Brunel University  
Cleveland Road, Uxbridge UB8 3PH UK

**Keywords:** chess; deliberate practice; expertise; handedness; intelligence; personality; seasonality of birth; talent.

## The Deliberate Practice Framework

In an influential paper, Ericsson, Krampe, and Tesch-Romer (1993) proposed that expertise is acquired only through practice deliberately designed to improve one's own skill. Deliberate practice (DP) consists of goal-directed and repetitive activities that enable immediate feedback. These activities, performed individually, are typically effortful and not enjoyable, and cannot be carried out for more than a few hours a day. Inherited factors are not excluded, but these factors are limited to motivation and general activity levels, with cognitive abilities being explicitly excluded. The DP framework has had a considerable impact in the field of expertise, and numerous studies have been carried out to examine the role of practice in domains such as art, sports, games, and professional activities.

## New Data on Deliberate Practice in Chess

Much of what we know about expertise comes from chess (Gobet et al., 2004) and it is therefore a good domain for examining to what extent DP accounts for the development of expertise. Gobet and Campitelli (2007) collected data from a sample of 104 Argentinean players ranging from weak amateurs to grandmasters. They found that, while DP accounted for 34% of the variance in skill (measured by players' national rating), several results did not fit the DP framework. Although the average amount of DP necessary for reaching master level was considerable (11,053 hours), there was also a substantial amount of variability, with the slowest player (23,608 hours) taking nearly 8 times as long as the fastest player (3,016 hours). Some players with more than 25,000 hours of DP never reached the master level. These results violate Ericsson et al.'s (1993) assumption that DP yields monotonic benefits. In addition, group practice was a better predictor of skill than individual practice, and the age at which players started playing chess seriously correlated with current rating even after the number of hours of practice was controlled for statistically.

Analyzing longitudinal data from the same sample, Campitelli and Gobet (in press) found that, after playing chess seriously for three years, masters had a higher rating than Experts although they had not practiced more. The Experts' ratings did not improve much thereafter, in spite of substantial amounts of DP. This study also presented evidence that practice in chess is more complex than previously thought and is not limited to the kind of repetitive and feedback-rich activities described in the DP literature.

## Other Factors Mediating Expertise in Chess

If practice does not explain all of the variance, what are the other factors that are involved in the development of chess expertise? Gobet and Campitelli (2007) showed that chessplayers' degree of handedness is weaker than in the population at large. Two studies have also shown a correlation between chess skill and intelligence (Bilalić et al. 2007a; Grabner, Stern & Neubauer, 2007), adding to a complex pattern of data (Didierjean & Gobet, in press). Personality differences exist as well (Bilalić et al., 2007b). Finally, Gobet and Chassy (2008) discovered that expert chess players in the northern hemisphere tend to be born more often in late winter and early spring than the overall population.

The results briefly reviewed here show that practice encompasses more varied training activities than argued by Ericsson et al. (1993). They also highlight the importance of individual variability and show that other factors play a role in the acquisition of expertise. Practice is a necessary, but not sufficient condition for reaching high levels of expertise.

## References

- Bilalić, M., McLeod, P., & Gobet, F. (2007a). Does chess need intelligence? A study with young chess players. *Intelligence*, 35, 457-470.
- Bilalić, M., McLeod, P., & Gobet, F. (2007b). Personality profiles of young chess players. *Personality and Individual Differences*, 42, 901-910.
- Campitelli, G., & Gobet, F. (in press). The role of practice in chess: A longitudinal study. *Learning and Individual Differences*.
- Didierjean, A. & Gobet, F. (in press). Sherlock Holmes – An expert's view of expertise. *British Journal of Psychology*.
- Ericsson, K. A., Krampe, R. Th., & Tesch-Romer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100, 363-406.
- Gobet, F. & Campitelli, G. (2007). The role of domain-specific practice, handedness and starting age in chess. *Developmental Psychology*, 43, 159-172.
- Gobet, F. & Chassy, P. (2008). Season of birth and chess expertise. *Journal of Biosocial Science*, 40, 313-316.
- Gobet, F., de Voogt, A., & Retschitzki, J. (2004). *Moves in mind: The psychology of board games*. Hove, UK: Psychology Press.
- Grabner, R. H., Stern, E., & Neubauer, A. C. (2007). Individual differences in chess expertise: A psychometric investigation. *Acta Psychologica*, 124, 398-420.