

Barry Hymer and Peter Wells

with Tim Kett

and insights from Michael Adams, David Howell, Harriet Hunt,
Gawain Jones, Luke McShane, Matthew Sadler and Nigel Short

Chess Improvement



It's all in the mindset

Foreword by Henrik Carlsen

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Foreword by Henrik Carlsen

I've been granted the privilege of writing a short foreword to this extraordinary book about chess improvement by educational psychologist Barry Hymer and grandmaster Peter Wells. The authors combine the use of theoretical knowledge about learning processes with relevant chess practice, based in part on key insights from most of the leading British chess players over the last 30 years. The result is interesting, useful and also entertaining thanks to the numerous anecdotes and general insights shared throughout.

Coaching a student or child is hugely challenging due to the remarkable individual differences in talent, ambition and ways of learning. As we all know from school, the one-size-fits-all approach is basically equivalent to one-size-fits-none. So, from a personal perspective, this book is a timely and useful reminder of the many and significant differences in approaches to learning between the two chess players I know best: my son, GM Magnus Carlsen, and myself – rated about 800 Elo points below him. Chapter 1 focuses on mindset, distinguishing between a growth mindset – clearly relevant to Magnus' approach to chess learning for more than 20 years – and the alternative more fixed and limiting mindset that I'm painfully aware fits all too well with my own approach to chess both 40 years ago and now – but not in the future!

The book is well structured, proceeding from a discussion of mindset, through motivation, challenge and feedback, purposeful practice, dealing with failure, metacognition (reflecting on the thinking and learning process), to the role of cooperation. Within each chapter the authors provide useful relevant theory combined with examples of chess practice and experience, and without making the common mistake of generalising and pronouncing too much. By describing different approaches and trying to find common ground, the authors invite the reader to reflect and grow personally as a chess player. As such, the book is itself a good example of metacognition in action. The main takeaway isn't and shouldn't be a strict recipe on how to coach, but rather a broad and logical framework, helping the reader to better understand,

examine and address the needs of a student or child on 'growing into' the chess learning process.

For me personally the book is a treasure trove of useful insights and anecdotes that can help me improve as a chess player, and it would have been a very useful vehicle of enhanced metacognition if it had been available 20 or so years ago when my kids were young. On the other hand, not every insight would have been a revelation to Magnus and his intuitive approach to chess learning that my wife and I somehow managed not to harm or disrupt significantly. Whilst the general framework is highly useful for most coaches and parents, for outliers represented by the world chess elite there are usually extremely strong individual qualities that turned out to be decisive – even if more or less unnoticed at the time – and the main role of coaches and parents is, in my view, to provide careful facilitation and to 'do no harm.'

In the chapter on metacognition Peter refers to former child prodigy Josh Waitzkin, well known as the subject of the book *Searching for Bobby Fischer*,¹ pinpointing an important truth: 'listening is the most vital skill for any teacher,' specifically referring to the former trainer of Kasparov and others: the late Yuri Razuvaev. This is supported by our own experience with Razuvaev. Back in the spring of 2005 he was tasked by Garry Kasparov with giving Magnus homework between two training sessions. This consisted of analysing in detail four of Magnus' own losses, a general practice promoted by most chess coaches and also in this book. Magnus was already a GM at the time, but frankly he was not used to this approach. He disliked the whole concept and subsequently he even cancelled the second training session. In October 2006 Magnus participated in the Tal Memorial for the first time. I met Razuvaev at the opening ceremony and apologised for the fact that Magnus hadn't heeded his advice on playing less and analysing his own games thoroughly. Razuvaev smiled and said something like: 'No, don't worry! I've followed Magnus closely and he seems to have an extraordinary ability to learn from his games just through preparation, playing and immediate reflection after the game. Just keep up what you're doing! I've always been thankful for his encouraging remark, and the exemplary way in which he showed his own growth mindset!

For the chapter on purposeful practice nine useful conclusions are presented. Starting with 'The passion is the point' and 'The best chess work your child

1 F. Waitzkin, *Searching for Bobby Fischer: The Father of a Prodigy Observes the World of Chess* (London: Penguin, 1993).

will ever do is the work they are driven to do by themselves' seems highly appropriate to me. A comparison between Magnus' primary and secondary school progress in maths and chess is instructive: in maths he was a bit of a wizard at the age of six, but after receiving more than 500 hours of maths teaching he finished secondary school worse at arithmetic than he'd been at six. In chess he received maybe a few hundred hours of coaching in the same period and went from being a complete beginner to qualifying for the World Championship Candidates tournament a few days after his 15th birthday. His own passion, drive and curiosity trumped every external factor.

Most people can think of a few books that have had a profound impact on them. These books achieve this effect by providing insights that enable a paradigm shift in their way of thinking about or understanding a significant topic. Personally, I would point out for instance *The Rebel*² by the philosopher Albert Camus and *The Quark and the Jaguar*³ by the physicist Murray Gell-Mann. I think *Chess Improvement: It's All in the Mindset* will be such a game changer for many players, parents and coaches, and I hope you enjoy the book as much as I have!

2 A. Camus, *The Rebel*, tr. Anthony Bower (London: Penguin Classics, 2000 [1951]).

3 M. Gell-Mann, *The Quark and the Jaguar: Adventures in the Simple and the Complex* (Royal Tunbridge Wells: Abacus, 1995).

Chapter 1

Mindset and chess

The hallmark of successful individuals is that they love learning, they seek challenges, they value effort, and they persist in the face of obstacles.

Carol Dweck

I want to dispel the myth of the Mozart-like easiness of [Tal's] play and demonstrate his enormous efforts and bitter tears. I will cite chess material to confirm these psychological hypotheses.

Alexander Koblenz, Mikhail Tal's former trainer

The nature of mindset

This is a book that attempts to synthesise current understandings about learning and apply this knowledge to the domain of chess improvement. In so doing, we draw on research from many domains of cognitive, developmental and educational psychology, and go on to relate this knowledge to the lived experiences of elite chess players. What were the moments and periods in their lives that distinguished their trajectories from other, perhaps equally 'talented', contemporaries? What drove and inspired them in their love for the game, and sustained them in and through the tough times? Did they actually have tough times at all, or was their eventual chess eminence a tale of smooth progression and therefore largely inevitable? Do their stories have any significance for junior players and their parents, and for amateur players trying to improve at the game they love whilst also juggling family and career demands that pull in the opposite direction?

In arguing that, yes indeed, the developed expertise of elite players speaks powerfully to those of us operating far lower on the chess food chain, we

draw in particular on a field of psychology that examines the crucial role that beliefs about the concept of 'ability' play in influencing our learning behaviour. This is the place of *mindset*. Mindset theory is the brainchild of the Stanford developmental psychologist Professor Carol Dweck. It has been over four decades in the making and it continues to evolve and grow in response to new research findings, new challenges and new applications in fields as diverse as education, business, sport, art, interpersonal relationships and geopolitical conflict resolution – indeed, any conceivable domain of human achievement. Within education, there is an apparently insatiable interest in Dweck's work and in finding ways to translate the theory into practical ideas for implementation – although unfortunately not all of these applications are based on sound understandings of the research.

We have no intention of attempting to outline 40 years' worth of theoretical and empirical evidence around mindset in this book,¹ so here is a simple tabulated representation of the core of mindset theory.

Fixed versus growth mindsets

Mindset continuum	Fixed	Growth
Your belief	Qualities like intelligence, talent, ability and so on are relatively fixed or stable traits.	These qualities are fluid and mostly cultivated through learning experiences.
Leads to your priority	Looking clever, not stupid (because you don't believe you can get cleverer).	Becoming cleverer (because you believe you can).
So you feel clever when you achieve easy, low-effort successes and you do better than others.	... you're fully engaged in a tough task, stretching yourself and developing or practising new skills.
And you avoid effort, difficulty, setbacks, higher performing peers.	... easy, previously mastered tasks.

1 See Carol Dweck's book *Self-Theories: Their Role in Motivation, Personality and Development* (New York: Psychology Press, 2000) for an excellent summary of her early research, her bestselling book *Mindset: The New Psychology of Success* (New York: Random House, 2006) for a version aimed at a wide audience, and any number of scholarly and more popular takes on the subject via the world wide web.

As this table attempts to capture, a mindset is simply a belief about the mutability or otherwise of concepts such as intelligence. Individuals holding fixed mindsets for intelligence tend to believe that intelligence or talent is essentially stable and resistant to significant change. With this mindset, the provenance of intelligence is something of a mystery, but it's likely to lie in our genetic make-up. And we all know that genes are highly resistant to environmental manipulation – don't we?

For individuals holding growth mindsets, by contrast, we see our skills or talents not simply as the fruits of some chromosomal alchemy but as an indicator of the extent to which we have seized on learning opportunities, persisted in the face of obstacles, increased our effort, improved our learning strategies and so on. We don't deny the existence of such abstract concepts as 'intelligence' or 'ability,' but we see these things as starting points, not as predetermined destinations.

So far, so obvious, surely? Deep down, doesn't everybody realise that working hard and strategically at something leads to improvement? Well, perhaps amazingly, no – we don't all believe this. In his autobiography, the English comedian Eddie Izzard writes, 'When I was about twelve, I realized that if you work hard, you get better results. This might seem obvious to most people, but it was not apparent to me.'² Eddie isn't alone – the numbers who don't 'get' the link between effort and achievement are large. And there are reasons for this: if I have been conditioned to believe that my successes are down not to my own actions but to some inherent quality ('Clever boy!'), then surely it follows that my failures must be attributable to some inherent deficit? And inherent deficits by their very nature aren't easily remediable. This conditioning starts very young. One study found that parents' praise of children's effort at 14–38 months of age (e.g. 'Good job putting that block back in!') rather than natural ability ('You're a smart girl!') predicted growth mindsets at 7–8 years, suggesting that causal mechanisms identified in many experimental studies focused on school-related achievement may be operating in home environments too.³

It's important to note that arguing whether a belief in the fixed or plastic nature of intelligence is 'right' or 'wrong' is, in many ways, to miss the point.

2 E. Izzard, *Believe Me: A Memoir of Love, Death and Jazz Chickens* (London: Penguin Random House, 2017), p. 118.

3 E. Gunderson, S. Gripshover, C. Romero, C. S. Dweck, S. Goldin-Meadow and S. Levine, Parent praise to 1–3 year olds predicts children's motivational frameworks 5 years later. *Child Development*, 84(5) (2013), 1526–1541.

It's not especially relevant whether or not things like twin studies adequately explain the genetic or environmental roots of individual variation in human performance. Although there is now overwhelming evidence from such fields as epigenetics and neuropsychology for the essential plasticity of the brain and its capacity for growth when the conditions are right, what is more significant is the *effect* of your belief on your behaviour. As Henry Ford (perhaps erroneously) is said to have put it, 'Whether you think you can, or whether you think you can't, you're right.' If I don't believe that investing in hard work and effective strategies is going to do much more than tinker around the edges of achievement, I'm unlikely to be prepared to make this investment. And I'll be able to attribute my resultant lack of progress or success to that early diagnosis of 'insufficient raw material.' But if I believe that I could develop the skills required for higher performance, the chances are I will seek out the opportunities to do just that. As a consequence, I have far greater prospects for progress and ultimate success.

A few subtle but important points to make about the nature of mindset, before we turn to its specific relationship to chess development: mindsets aren't themselves fixed, and nor do they exist as mutually exclusive binary opposites. It's because they *aren't* fixed (they're just beliefs, and beliefs can change in response to a whole variety of factors, including new experiences and insights) that they *can't* exist as mutually exclusive binary opposites: we present mindsets for clarity's sake as positions on a continuum. Although these positions can be relatively stable for some people in some situations, they can also be rather fluid and context specific. I could, for instance, have a typically fixed response to DIY tasks ('I'm not the practical sort') but a typically growth response to IT ('Let's see if it helps if I reload this program').

Even within the same domain of achievement, such as chess, it's possible to present with differentially fixed (or growth) responses: 'I've never been any good at endings – they don't suit me – but in dynamic middlegames I'm in my element.' What is significant here is not that there are skill differences between and within individuals – that much is often palpably obvious – what matters is the reasons we give for these differences. For example, in acknowledging Keith Arkell's expertise in rook endgames, there is a big difference between believing he was 'born' to develop these skills (that rook endgame marker on chromosome 23, perhaps?) and believing these to be a product of the fact that he has worked hard at this area of his game for many decades

and, indeed, often aimed to lead his opponent into these positions – thereby serving to add to the weight of his accumulated experience.⁴

Let's stick with this example to make a final and even more nuanced point: there is a risk that we might be tempted to reify mindsets as representing some sort of identity statement: 'She's got a really good growth mindset, whereas he's so fixed.' When we resort to verbs like 'got' and 'have' and the 'is' form of the verb 'to be', it's a very short jump to the world of implicit blame and accusation – for example, 'He's failed to reach his potential because of his fixed mindset.' Mindsets aren't statements of identity; they're characteristic responses to certain critical conditions like high challenge, failure and criticism. And they're only important in these specific instances. In situations of low challenge, easy success and effusive praise, fixed mindsets can 'work' just fine, and growth mindsets could even be a handicap. Although they've often been misunderstood in terms of 'getting' and 'having' and 'being', mindsets can more accurately be seen as something akin to a coping strategy, and this is the sense in which we use them in this book. So, if you really want to go for the growth mindset burn, you'll convert this understanding into great care when using the verb 'to be': there's a fine but crucial difference between observing that Keith Arkell commonly plays rook endgames brilliantly and asserting that he *is* a brilliant rook endgame player!

Chess development as a domain of mindset

The thing about talent, however much you have, you still have to keep improving. And that depends on so many other factors, which are probably more important than your raw ability.

Michael Adams

Mickey's observation from his long career as an elite player – and as an observer of other elite players – was made towards the end of his interview.

4 A practice rewarded most recently at Bunnratty 2020, in Keith's game against the Czech legend Vlastimil Hort.

It captures beautifully many key aspects of learning theory in general and mindset in particular: raw talent is only the starting point of real achievement. And as other interviewees have also noted – we're not even talking 'exceptional talent' here – just 'good enough' or 'sufficient'. Kurt Moreby, father of the promising young FIDE Master (FM) James, was especially candid in his attribution of James' development as a player to an intensive and carefully calibrated training programme ('Project James') rather than to any 'natural ability'. The factors that grow talent are not fixed – they can be pursued, nurtured, finessed and harnessed in the service of continued progress.

There isn't (yet) a substantial corpus of work in the academic domain that explores the role of mindset in chess improvement, but in a creative small-scale study (which merits replication with a more robust sample size) Kramaley and Wishart found indicative evidence that chess players with a growth mindset for chess ability had longer serious study sessions, and those with an intelligence growth mindset participated in more serious competitions.⁵ This is in line with what might be predicted: players who believe they are capable of making continuous progress are more likely to commit to serious study (which may not always be enjoyable – see Chapter 4) and are less likely to be put off by the inevitable failures associated with strong competition (see Chapter 5).

Although academic studies in the field are few, very many chess authors have identified salient features of mindset theory implicitly and from an intuitive, experiential perspective.⁶ A few have even namechecked Carol Dweck and mindset theory explicitly,⁷ but we are not aware of any previous attempt to structure an entire chess development guide around its central tenets. In

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- 5 D. Tenemaza Kramaley and J. Wishart, Can fixed versus growth mindset theories of intelligence and chess ability, together with deliberate practice, improve our understanding of expert performance? *Gifted Education International*, 36(1) (2019), 3–16.
 - 6 The Borises Gulko and Gelfand positively bleed mindset insights in their writings and interviews. And the prolific chess writer Andrew Soltis is often at pains to point out that chess expertise is skill based, not talent based – for example, 'It is widely believed ... that you are born with or without calculating ability, that it cannot be taught. Not true: calculation is a skill that can be studied, learned and sharpened' (*The Inner Game of Chess: How to Calculate and Win* (Newton Highlands, MA: Mongoose Press, 2014), p. 8). And chess instincts and intuition 'are qualities that may seem innate but can be trained' (ibid., p. 76).
 - 7 Josh Waitzkin, for instance, explores mindset briefly in his book, *The Art of Learning: A Journey in the Pursuit of Excellence* (New York: Free Press, 2007), and Jacob Aagaard makes considerable use of Carol Dweck's insights in *Thinking Inside the Box* (Glasgow: Quality Press, 2017).

this book, we aim to show what Mickey knows – that chess expertise is less a function of the natural outworking of some inborn gift (as in the much-used and little-evidenced phrase, ‘Talent will out’), and more a consequence – from whatever starting point of ‘natural talent’ – of a long-term and faithful adherence to well-researched principles and practices of talent development. Such elements include persistence in the face of difficulties, the quality of practice and the nurturing of intrinsic rather than extrinsic motivators, for instance.

When Genna Sosonko, in his fascinating book *Russian Silhouettes*, asks, rhetorically, ‘Why did [Tal] play like he did and why did he win?’ we want to affirm his response, ‘Of course, *it is easy to hide behind the words talent or genius.*’⁸ This would be the fixed mindset response that is frequently heard, and it works in reverse too as an explanation for a failure to reach the highest levels. An especially vivid representation of this fixed mindset belief can be seen in the following extraordinary claim: ‘People often give up chess too late ... not every chess addict has the talent to become a grandmaster as shown by my father [B. H. Wood] and my brother-in-law [Peter Clarke].’⁹

Aligning ourselves with Sosonko, we will offer alternative answers than talent alone to the explanation for Tal’s giftedness. Alongside the happenstance of limited opportunities or parental support, we will explore answers that offer us no easy excuses for failing to reach high levels of expertise (‘I wasn’t blessed with the gift of good chess genes’), and instead which challenge us to confront the franker and more awkward realities¹⁰ – perhaps I was too lazy or insufficiently motivated to put in the hard yards? Or perhaps I focused my chess energies on the wrong or deficient practices? Or perhaps I was too resistant to challenges or too timid at critical moments? Perhaps, more generally, I allowed my fixed mindset responses to prevail?

In the table that follows, we highlight some of the ways in which mindsets can manifest themselves in chess. We recommend that you see this table as

8 G. Sosonko, *Russian Silhouettes* (Alkmaar: New In Chess, 2009), p. 25.

9 From Christopher Wood’s article, *Memories of Krakow, Chess*, 83(8) (November 2018), 34–37 at 36. There is an implicit assumption here that becoming a grandmaster is the only viable reason to play chess. Further, it is an ironic testament to the longer-term triumph of intrinsic motivation and persistence over early promise and retreat from competitive play, which the author himself acknowledges in the same article: ‘Strangely, brother Philip’s chess at school was a class or two worse than his siblings, yet now he plays more than all three of us together.’

10 Beyond, of course, a conscious and perhaps rational decision to pursue an alternative and arguably more readily remunerative career or family path!

an indicative guide, rather than as a tool to nail down your own or someone else's mindset. Whilst there is no empirically robust correlation between 'natural ability' and mindset in chess, or in any other domain, you would expect titled chess players to be more likely to have held growth mindsets at critical junctures in their chess development. After all, they've needed these in order to cope with inevitable disappointments and difficulties en route to securing their titles, and the best of them continue to provide evidence of growth mindset reactions in their careers. For example, as we'll see later, Garry Kasparov was and Magnus Carlsen is known to be especially good at rebounding from defeats, whereas lesser players might tend to catastrophise a defeat – viewing it as a function of being rumbled or reaching their limit and playing weakly in their next game as a result (reactions which are often colloquially attributed to 'psychological weakness' or 'lacking resilience').

That said, it should be recognised that a few chess legends could, in a historical reading of their careers, be exposed as having been in thrall to a fixed mindset. Players with exceptional natural talent, having often had childhoods of prodigious and apparently effortless achievement (with all the praise and attention that accompanies this), can be especially vulnerable. Accounts of the adult Samuel Reshevsky's less-than-endearing behaviour at the board,¹¹ his lifelong aversion to working at widening his opening repertoire, and his refusal to play second fiddle to the new kid on the block (Fischer) at Olympiads are a possible 'tell', for instance. And the great Cuban José Raúl Capablanca's entire career can be viewed through the fixed mindset prism. Here was a player who most commentators describe as one of the most naturally gifted players of all time. By all accounts he had an apparently inborn, intuitive feel for the game, a remarkable capacity for rapid processing and a record of largely uninterrupted success since early childhood. In a tournament career from 1910 to 1939, he won the vast majority outright and placed lower than third only once – AVRO 1938. In these tournaments he recorded 270 wins and a mere 26 defeats. Effortless success breeds complacency. Capablanca's hold on the chess crown was relatively brief – certainly by contrast with both his predecessor and his successor. Against all expectations at the outset of the match, he lost the world championship in 1927 to the great workaholic, chess obsessive and seeker-after-complexity Alexander

11 Simon Webb, for instance, describes there being 'a certain amount of Aggro' at the start of his game against Reshevsky in 1973, and being the victim of 'Smoke Warfare' for a large part of the battle: S. Webb, *Chess for Tigers* (Oxford: Oxford University Press, 1979), p. 58.

Alekhine, and never got a chance to win it back. As Fred Reinfeld observed, 'The tragedy of Capablanca's career is perhaps the most shattering of all the tragedies of the World Champions: the gods blessed him with a gift whose very unfolding made self-realization and artistic growth impossible ... What did not come easily to him, did not come at all.'¹²

More generally, many very promising young players who reveal characteristic fixed mindset responses are prone to reject the game at the point at which they encounter truly strong opposition and resultant defeats; they falsely attribute these moments to 'reaching their potential'. But as we'll see later, even today's elite players are susceptible to fixed mindset moments – they wouldn't be human if they weren't. So, take heart if you identify strongly with some of the fixed descriptors below – you could be in good company!

What is my chess mindset? Indicative responses and attitudes

Chess domain	Fixed mindset	Growth mindset
Gradings/ratings	Strong focus to the point of obsession. A rating is the foremost symbol of your status as a chess player. Chess challenges are prefaced by such inner voice questions as, 'How will a win/defeat impact on my rating?' As a result, I choose my opponents and tournaments carefully to maximise the likelihood of earning rating points.	Strong focus, but for a very different reason: I'm not much interested in the status a rating brings per se, but in the accompanying opportunities to play in more challenging and hence more exciting events. The expectation is that 'If I improve my knowledge and understanding of the game, my rating will look after itself.' I choose opponents and tournaments carefully to ensure that I continue to be challenged.
Approach to victories	These are celebrated enthusiastically, as they prove I've got high levels of natural chess ability.	Satisfying but secondary to the quality of the game: was it interesting, stimulating and something I can learn from?

12 F. Reinfeld, *The Human Side of Chess* (London: Faber & Faber, 1953), p. 148.

Chess domain	Fixed mindset	Growth mindset
	I thrive on confidence. I invite post-mortems only to show my opponent just how much I saw and why I was clearly going to win.	I thrive on challenge. I invite post-mortems to see if I could have played even better and to learn what my opponent had been considering.
Approach to defeats	Defeats are deeply unpleasant and to be avoided at all costs. These show me that I'm maxing out on my (finite) chess ability. I tend to crumple in the face of failure and give up the game when I start getting beaten by stronger players – or worse, by the talentless schmucks I should beat blindfold. I avoid post-mortems (and depressing engine analyses) or at least make sure I win those!	Defeats are obviously undesirable but certainly remediable. These are inevitable if I'm to make progress, and they represent excellent learning opportunities. I seek out the chance to have a post-mortem or subject my moves to an engine analysis to figure out where I went wrong. I show resilience in the face of adversity (and in the longer term, therefore I often find I'm overtaking more naturally 'gifted' players).
Gamesmanship/ cheating	Could be in evidence, especially amongst younger players, as all that matters is the result.	Vanishingly rare, as there's little satisfaction to be had from getting a result via non-chess factors.
Making and receiving draw offers whilst holding an advantageous position	Depends heavily on my opponent's rating: if she's stronger than me, I will offer a draw – it's a good result. If she refuses, I will try again later. I don't want to lose more than I want to win (known in the psychological literature as a 'performance-avoidance goal').	Depends heavily on the position: if I hold the advantage I should try to convert it to a win. Even if I go on to lose I've still learned from the experience. My opponent's rating is almost irrelevant in this instance. I want to win – or at least to learn – more than I don't want to lose (a 'performance-approach goal').

An engaging and instructive guide that sets out how the application of growth mindset principles can accelerate chess improvement.

Blending theory, practice and the distinct but complementary skills of two authors – one an academic (and amateur chess player) and the other a highly regarded England Chess Olympiad coach (and grandmaster) – *Chess Improvement* is an invaluable resource for any aspirational chess player or coach/parent of a chess player.

Barry and Peter draw on interviews conducted with members of England's medal-winning elite squad of players and provide a template for chess improvement rooted in the practical wisdom of experienced chess players and coaches.

Suitable for any chess player, or coach or parent of a chess player.

Chess Improvement will be a game changer for many players, parents and coaches.

Henrik Carlsen, father to world champion Magnus Carlsen

Wise, witty, informative and inspiring!

Carol Dweck, Lewis and Virginia Eaton Professor of Psychology, Department of Psychology, Stanford University

Offers something for all chess players, both young and old.

Matthew Sadler, IT consultant, chess grandmaster and co-author of *Game Changer*

A hugely informative and highly readable account of how you can improve your chess by adopting a growth mindset.

Sandy Ruxton, Honorary Research Fellow, Department of Sociology, Durham University, and chess coach

A must for all chess educators, as well as for aspiring players (and their parents) of all levels of ability.

Dmitri Shneider, Chief Financial Officer, PlayMagnus, and chess international master

A wonderfully creative collaboration between educational psychologist Barry Hymer and Peter Wells, one of the most thoughtful and eloquent English chess writers.

Harriet Hunt, chess international master

If you have any interest in chess or in learning, you will find this book worthwhile. If you have an interest in both, you will be enthralled.

Dylan Wiliam, Emeritus Professor of Educational Assessment, UCL Institute of Education

Has the potential to have a greater impact on chess than AlphaZero. A seminal work.

David Kramaley, co-founder and Chief Executive Officer, Chessable

Every coach and every parent who wants to support their chess-playing child should buy a copy.

David Edmonds, co-author of *Bobby Fischer Goes to War*

Well written and rigorously researched, *Chess Improvement* shares valuable insights and is often very funny.

Daniel King, chess grandmaster and coach

Barry Hymer is Emeritus Professor of Psychology in Education at the University of Cumbria and has written numerous books and papers on the subject of teaching and learning. He is one of the UK's foremost authorities on the educational applications of mindset theory.

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