4. Does thinking interfere with doing?

To hear Abdul-Jabbar describe it, you’d need a graphing calculator to project the right time and place to be to block the shot.


“[W]inning the psychological battle…usually translates into you playing better than your opponent, because you’re thinking more clearly.”

Tennis Player, Rafael Nadal

Sometimes, when it really matters, everything falls apart. A vivid example of this occurred during the 2011 Republican primary presidential debate when Texas governor Rick Perry, in explaining how, if he were elected, he would eliminate three government agencies, couldn’t call to mind the phrase “the department of energy”: “The third agency of government I would do away with,” the Governor proclaimed, “the education, the uh, the commerce and let’s see, I can’t—the third one. I can’t. Sorry. Oops.” He curtailed his presidential campaign shortly after this.

Though other explanations are possible, it seems that Perry’s monumental choke was in part due to his heightened state of anxiety over how well he was going to be perceived; his worry apparently interfered with his ability to bring to mind a phrase which in some sense he knew very well—after all, he had been railing against the department of energy nearly every day during the months leading up to the debate. But how does anxiety cause a choke?¹ How does anxiety cause one to bungle an action that would otherwise be a piece of cake?

No one fully knows the answer to this question, however, the psychologist Sian Beilock, theorizes that anxiety may lead to choking in public speaking when individuals try to bring into working memory information they should be able to say automatically. (See for example, Beilock, Kulp, Holt, & Carr, 2004; Beilock & Carr, 2005; Beilock & DeCaro, 2007.) In explaining Chief Justice John Robert’s fumbling of Obama’s presidential oath, Beilock tells us that “when the pressure was on, [Roberts] fumbled the well-learned set of lines likely because [he] was devoting too much working memory to monitoring the words he knew by heart” (p. 1)

¹ Does the choke require explanation or does it merely describe what would be predicted statically. Psychologists such as Beilock who aim to explain choking in terms of increased attention to movement, assume that it is a phenomenon that requires explanation; I shall do the same.
Presumably, she would provide a similar account of Perry’s guffaw. Her advice: “Just go with it and try not to think too much about every word” (275).

Beilock’s explanation of choking in expert-level athletics also leans on the idea that high-level skills are performed automatically and that trying to consciously monitor and control them is detrimental. In line with the Fitts and Posner model of skill acquisition, according to which the performance at the highest level is “autonomous,” Beilock claims that “highly practiced skills become automatic, so performance may actually be damaged by introspection, which is characteristic of an earlier, consciously-mediated stage.” Anxiety, on her view, prompts choking because it causes experts to think about what they are doing. Invoking the principle of interference, which is the part of the just-do-it principle that says that thinking about occurent expert performance interferes with it, Beilock tells us that in high-pressure situations, sports skills “are hurt, not because of worrying, but because of the attention and control that worry produces.”

In such situations, pressure leads to worry and worry leads experts to monitor and control their actions. And it is the monitoring and control, on her view, that leads to the choke. Beilock’s advice: “[D]istract yourself…don’t give yourself too much time to think, focus on the outcome, not the mechanics… [and] just do it.” (p. 232). In fact, she tells us that “just do it,” seems to be “the key to high-level sports performance” (p. 185).

Beilock’s ideas and the direction of her research are in part inspired by the psychologist Roy Baumeister’s views on expert action under pressure. In high-pressure situations, according to Baumeister, “consciousness attempts to ensure the correctness of… execution of skill by monitoring the process of performance (e.g., the coordination and precision of muscle movements); but consciousness does not contain the knowledge of these skills, so that[,] ironically[,] it reduces the reliability and success of the performance when it attempts to control it.”

Summing up what he sees as the conclusion of a number of studies on the relationship between pressure and poor performance, he says that “competition is arousing; arousal heightens self-consciousness; and self-consciousness disrupts performance of some tasks.”

The psychologist Richard Masters’ work on this topic also fuels the idea that choking occurs because the mind interferes with well-practiced routines, arguing that performance is likely to decline when experts consciously think about and try to control their well-practiced skills. To do so is to “reinvest,” which he defines as “purposefully endeavoring to run a skill with explicitly available knowledge of it.” High-pressure situations, on his view, lead to problems because high pressure causes reinvesting, and reinvesting, he thinks, degrades performance.

But are these views about the relationship between anxiety and skill correct? Do high pressure situations induce experts to focus on what they are doing? And is there a causal connection between thinking (or monitoring or conscious control) and poor performance at the expert level? Although I briefly ponder whether pressure can cause one to think about one’s

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3 As Jackson, Ashford, and Norsworthy (2006) maintain, the terms “conscious control” and “explicit monitoring” are distinct insofar as it is possible to consciously monitor one’s movements without consciously controlling them. However, it would seem that with conscious control comes conscious or explicit monitoring.


actions, my primary focus is on the question: Does thinking interfere with doing? And, as shall come as no surprise at the point, my answer is “no”: experts can and often do perform at their best while thinking about and focusing on what they are doing.

There are legions of studies that purport to provide evidence for the view that skill-focused attention to, monitoring and conceptualization of, and conscious control over one’s highly skilled movements degrade performance. And although I cannot hope to address all of them, I shall discuss three central and distinct approaches, what I refer to as the “varied focus experiments,” the “verbal overshadowing experiments” and the “statistical studies,” that are seen as substantiating the precept, as Beilock and Carr (2002) put it, that “skill-focused attention benefits less practiced and less proficient performances yet hinders performance at higher levels of skill execution.”

Varied focus experiments

Paring away the details, here is a description of the varied focus experiments. Participants, usually college students, are divided into two groups, the more highly skilled group and the novice group, where the division may be based on some type of team status, or number of years playing, or institutional rating. Both groups are then asked to perform 1) a skill as they normally perform it (the single task, or control condition) 2) the same skill while directing their attention to a specific aspect of their own movement (skill-focused condition), and 3) the same skill while engaging in an extraneous task (the extraneous-task condition). And generally the results of such studies are that relative to the control condition, the more highly skilled athletes perform significantly worse in the skill-focused condition yet only marginally (or negligibly) worse in the extraneous-task condition, whereas novices, relative to the control condition, perform significantly worse in the extraneous-task condition and, if anything, slightly better in the skill-focused condition. In other words, more highly skilled individuals when asked to focus on what they are doing worse in comparison to when they are focusing on an extraneous task while for less skilled individuals focusing on what they are doing does not seem to interfere with performance while focusing on an extraneous task does, or as Beilock and Carr (2002) state it: “skill-focused attention benefits less practiced and less proficient performances yet hinders performance at higher levels of skill execution.”

Wulf (2007) summarizes the research in this area by saying that the “findings clearly show that if experienced individuals direct their attention to the details of skill execution, the result is almost certainly a decrement in performance” (p. 23). Thus, focusing on what you are doing, such research seems to show, interferes with expert skill, or as Toner and Moran claim, “a practical implication...is that it would appear prudent for skilled performers to avoid consciously attending to their movement during competitive performance.” Thus the principle of (skill-focused) interference appears vindicated.7

Yet is it? Although one reasonable interpretation of the data invokes the principle of interference (the idea that attention to the details of skilled movement is deleterious), I think that there are other reasonable interpretations of the data, which, when combined with results of other experiments as well as various first person reports—both of which we shall go on to examine—should lead us to reject Beilock, Wulf, Ford and many others’ just-do-it conclusions.

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6 Beilock’s research as well as numerous psychological studies, such as Robert Gray (2004), Beilock et al. (2004, 2002), Ford, Hodges, and Williams (2005), and Leavitt (1979), appears to support the just do it principle, particularly the idea that self-reflective thinking, interferes with performance.

7 However, see Toner, Moran and Montero (forthcoming).
1. Lab performance is boring

The sorts of experiments that I just mentioned are often seen as supporting the view that, as Beilock and Carr put it, expert skill is “governed by proceduralized knowledge that does not require explicit monitoring and control,” and that an extraneous task (such as listening to a recording of words and aurally identifying a target word) “should not degrade performance in comparison with skill execution under single-task conditions, as attention should be available to allocate to secondary task demands if necessary without detracting from control of the primary skill” (p.). But I question whether attention to a secondary task does not distract the expert from performing at her best in a real life setting. It is not surprising that in a laboratory setting, where an expert already is performing half-heartedly, extraneous tasks will not degrade such performance since experts can fall into performing on auto-pilot if they do not care much about the outcome of their actions. Or as I tendered in the introduction, laboratory settings destroy expertise. Hence, it seems that, given this research, it is an open question whether an extraneous task would degrade an expert’s best performance. Indeed, given that experts in a wide range of fields demand settings with as few distractions as possible, it would seem extraneous tasks do degrade performance. Why else would experts dislike distractions? (It is also interesting to note that one reason athletes claim that they take the drug Adderall—a drug often given to those with ADD—is that it increases focus and eliminates distractions.)

Thus, despite this research, I see it as unlikely that experts tend to perform better or even just as well when distracted by extraneous tasks.

2. The extraneous task is much easier than the skill focused one.

But why would experts perform worse in the skill-focused condition than in the extraneous-task condition? Even if what I say about laboratory settings destroying expertise is correct, inasmuch as such settings never produce type of motivation experts have in real life situations, it would seem that in neither the skill-focused condition nor the extraneous-task condition do experts have real-life motivation. Another factor to take into account when analyzing these experiments is that the extraneous tasks appear to be much easier than the skill focused ones. Let me explain a study by Ford et al (2009) to give you a better sense of what I mean. In this study, subjects were divided into two groups, the more highly skilled and the less highly skilled, and were asked to dribble a soccer ball through a slalom course. In the skill-focused condition, participants were instructed to “continuously monitor their feet [not necessarily visually], attending to the side of the foot that was in contact with the ball,” and, upon hearing a tone, which was presented at random, to “indicate verbally whether the outside or inside of the foot was in contact with the ball.” This is clearly highly distracting, especially since it involves reporting on something that had passed, for the subjects hear the tone, note which side of their foot is or was most recently in contact with the ball and then, as they are moving on to

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8 I would like to thank Lorenzo [last name] an undergraduate student at the College of Staten Island for drawing my attention to this issue.

9 Paul Ford, the Liverpool psychologist notes, for example, that the participants in his Ford et al. (2009) experiment “were likely more skilled than those used by Beilock et al. (2002)” since his participants “had played competitive soccer for over 10 years and were currently competing at a semi-professional or university level in the United Kingdom” whereas the participants in Beilock et al.’s study were Canadian “and arguably of lower skill level.” (Ford et al also add a “nonskill internal focus condition,” in which they ask the more advanced players to focus on an aspect of their movement, their arms, which is not highly relevant to their skill. They also looked at performance using the nondominant foot. However, for simplicity I shall ignore these further conditions, as they do not affect my argument

9 [When Paying Attention Becomes Counterproductive: Impact of Divided Versus Skill-Focused Attention on Novice and Experienced Performance of Sensorimotor Skills, p. 10]
the next cone, report which side of the foot had been in contact with the ball, or had most recently been in contact with the ball when the tone sounded. Ford et al took this set up from Beilock et al., and their description of the instructions given to the participants makes this retrospective reporting explicit: “Individuals were instructed to attend to the side of their foot that was in contact with the ball throughout the dribbling trial, so that upon hearing the tone, individuals could verbally indicate whether they had just touched the ball with the outside or inside of their foot.” Reporting which side of their foot had touched the ball at the tone is, it seems, just much more difficult than the extraneous task, which in Ford’s study was a word-monitoring task, which required participants, while dribbling the ball through the slalom course, to monitor continuously a range of single syllabus concrete nouns and identify the target word, “thorn.”

Highly distracting skill-focused tasks seem to be the norm in this area of research. In Gray (2004)’s study, skilled baseball players were asked, during the skill-focused condition, to indicate whether their bats were moving upward or downward (when swinging at a simulated ball) by saying either “up” or “down” at the sound of a tone and Beilock, in another study, asked subjects who were putting golf balls to monitor the swing and say “straight” out loud at the exact moment of ball contact. The comparative extraneous-task conditions were, respectively, judging the judging the frequency of auditory tones reporting either “high” for the high frequency ones and “low” for the low frequency ones or saying “tone” each time a certain distinctive tone was heard. Thus it seems quite possible that the extraneous tasks were just less difficult than the skill-focused tasks and thus did not distract the players as much from the relevant, possibly skill-focused aspects of their performance which, according to the master cogito, they do focus on during performance. Increase the difficulty of the external focus task or decrease the difficulty of the internal focus task and, I imagine, the results would not be the same.

3) The skill focused task distracts from what the experts, in particular, would otherwise focus on

Still, both the more highly and less highly skilled groups perform the relatively difficult skill-focused task and the relatively simple extraneous-focus task, yet ability is differentially affected (the highly skilled group suffers in the skill focused task, while the less-highly skilled group does not). Why is this if not for the reason that for expert athletes, skill is automated so that monitoring and control interferes? That is, why is it not the case that, as Beilock concludes, “well-learned performance may actually be compromised by attending to skill execution”? (Beilock p. 10). In other words, why is it not the case that these experiments support a restricted principle of interference?

Again, I think that there are reasonable alternative explanations for these results. In some studies, this difference may be due to the fact that the skill-focused condition is more distracting for those who are faster at performing a skill. In the Beilock and Ford studies on soccer, inasmuch as the novice participants were already maneuvering the ball more slowly than the more experienced players, the task of looking back to what had just happened when or before the tone was heard was less onerous for them than it was for the faster, more experienced subjects. But, more generally, it may be that when experts focus on the highly distracting skill-focused tasks, they are distracted from the type of focus they have found beneficial, which in line with the master cogito can be skill-focused, while for novices, who may not have developed this important aspect of skill, there is nothing to be distracted from, and any improvements (some

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10 [When Paying Attention Becomes Counterproductive: Impact of Divided Versus Skill-Focused Attention on Novice and Experienced Performance of Sensorimotor Skills, p. 10]
studies document slight improvements) could be explained in terms of the request to monitor their feet, for example, simply helping them to develop this important type of focus.

Furthermore, it could be, and I claim that it is so, that experts are simply better at focusing on their own movements; they know how to direct their minds to their bodies while in action and can do it with a vengeance. And if the particular focus being requested, such as monitoring and recalling what side of the foot was most recently in contact with the ball, is not relevant to their skill, as would seem to be the case, it interferes with their performance more than with novices’ performance, as novices are not able to monitor these details of their movements as well.

4) The subjects are asked to monitor an aspect of their movement that has, for the more highly skilled group, become automatic

Finally, there is another way in which these experiments might be explained without invoking the principle of interference. On my view, even though experts in action focus on certain aspects of their movements, they do not and perhaps cannot without detriment focus on certain other aspects of their movements. Thus, consistent with the expert cogito (and inconsistent with the principle of interference) as applied to skill-focused attention is the view that some sorts of skill-focused attention are beneficial to performance at an expert level whereas others interfere because the latter are directed at aspects of the skill that have become proceduralized while the former do not; the former are still skill-focused, but just not on the fully automated parts of the skill. The more skilled players clearly have developed a larger automatic repertoire; thus it could be that in some of these studies the request to focus on a particular aspect of the movement, such as the side of the foot, induces attention to the proceduralized aspect skill, and such attention is detrimental even though other aspects of expert skill are not proceduralized and would benefit from skill-directed focus.

In sum, then, there are a number of interpretations of the psychological experiments on skill comparing skill-focused and extraneous-task-focused conditions that do not support just-do-it. Thus, even if high-anxiety can cause athletes and others to focus on their skills, such experiments leave room to doubt whether it is for this reason that high-anxiety interferes with performance.

Verbal overshadowing experiments

While the varied focused experiment are supposed to show that thinking interferes with doing, the phenomenon of “verbal overshadowing,” which occurs when declarative thought interferes with performance, is sometimes implicated in explanations for how it might do this. Research by Kristin Flegal and Michael Anderson illustrates this approach. In a paper entitled, “Overthinking skilled motor performance: or why those who teach can’t do” they present research which, as they see it, shows that for experts, as opposed to novices, thinking even retrospectively about performance hampers later performance. In their study, subjects—one group of more highly skilled and another of less highly skilled golfers—performed a putting task. Each group was then divided in half with one half explaining from memory what they focused on during the task while another group did an unrelated verbal task. All participants then performed the putting task again and it was found that the more skilled golfers who had been in the memory group performed much worse the second time around compared to the more skilled players who were in the unrelated task group. Furthermore, they found that the less-skilled players, if anything,
improved after the memory task in comparison to the less skilled players who performed the unrelated task. Highly skilled golfers, on their view, not only should just-do-it but also shouldn’t think about it afterward. They take this to have a practical implication for sports coaches: “Whereas verbalization assists in the early stages of acquiring a skill, it may impede progress once an intermediate skill level is attained” (p.).

But is this the correct conclusion to draw? Note that the participants in the study were asked, not just to record what they focused on, but to “record every detail you can remember, regardless of how insignificant it may strike you.” This means that the golfers were recording the irrelevant and possibly distracting thoughts that might have occurred, thoughts that hindered performance rather than helped it, and if they went into the second trial consciously thinking that they should not distract themselves in this way, they may have been placed in the situation of someone trying not to think about pink elephants. The lesser skilled players, of course, also may have been confronted with some pink elephants but probably far fewer. As I suggested earlier, less skilled players do not know how to think about their domain relevant actions as well as do more highly skilled players. Moreover, given that their skills were low to begin with, there is not much room for deterioration.

As I mentioned in the introduction, one problem with trying to understand expertise in the laboratory is that it is near impossible to get true experts into the lab and thus much of the research looking into expertise compares intermediate skill to novice skill. (Recall, I stipulate that experts are those who have practiced their skill in a deliberate manner for at least around ten years and are still practicing such skills in this way.) And I think it is significant that Flegal and Anderson’s “more highly skilled” participants were not what I am calling experts; they were not individuals who had trained seriously for at least around ten years and were still intent on improving. Rather, they are described as being of “intermediate level” by local golf experts based on the participants’ self-reported score for a nine-hole course and, indeed, of those who were classified as intermediate level players that were in the verbalization-task group, only 65% had ever taken a golf lesson. It may very well be that such players simply did not have a sufficient amount of training in conceptualizing their actions.

The detrimental effects of conceptualization on perceptual judgments, or “verbal overshadowing,” was also thought to play a role in the Wilson and Schooler experiment I discussed at the start of Chapter Two. Recall that in this study, researchers found that college students performed relatively well in ranking jams (as judged by the rankings listed on Consumer Reports) when they were asked to simply make a list of rankings, compared to when they were asked to make a list of rankings and also explain their reasons for those rankings. Their attempt to verbalize the reasons for their judgments apparently interfered with, or overshadowed, their perceptually accurate judgments. Yet, as I suggested, the expert jam tasters employed by Consumer Reports who served as a standard for accuracy were, presumably, not negatively affected by verbalizing their preferences. And it may very well be that expert golf players would not be hampered by recording what they had focused on during the putting task.

Schooler’s more recent work is in line with the possibility that experts are able to conceptualize their actions without interference. For example, Melcher and Schooler (1996)

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11 See also Abernathy and Hamm (1995) who explain that “the nature of expert [surgical] knowledge explains why it is difficult for the expert to explain accurately how he or she is able to make a diagnosis.”

12 See also: “Schooler and Engstler-Schooler (1990) observed that participants who described a difficult-to-verbalize stimulus (the face of a bank robber) from memory were much worse at later recognizing that face than were participants who did not put their memory into words.”
found that while wine tasters of an intermediate skill level were less accurate at recognizing a previously sampled wine after describing it, more highly skilled wine tasters were not. I spoke with the wine critic Peter Leim about this who said that “typically you don’t have much time with each glass to think,” but quite contrary to Beilock’s advice to not “give yourself too much time to think” he also said, “but the more time you have, the better your judgments are.” In another study, Melcher and Schooler (2004) found that subjects who received either perceptual or conceptual training in identifying types of mushrooms were not affected in their attempts to differentiate various mushrooms, whereas those who received no mycological training were. Flegal and Anderson cite this study, yet in making general recommendations, they do not seem to take it into account: “The present finding indicates that simply verbally expressing one’s recent motor action may sow the seeds of poor execution during later performance,” and that “unless a concentrated effort is made to maintain one’s procedural expertise, the verbalization necessary for teaching may hasten a decline in skill,” which, as they point out, suggests “a new view of an old adage: Those who teach, cannot do.” But I think that their study gives us little reason to think that this is true of experts, of those who have trained hard and long to do what they do.

**Those who do, can’t teach?**

Philosophers have tended to focus on the contrapositive of Flegal and Anderson’s adage: Those who do, can’t teach. Kant, for example, comments in the critique of Judgment (see 47) that Homer cannot teach his method of composition because he does not himself know how he does it. Contemporary philosophers such as Robert Brandom (1994) and John McDowell (2010) are fond of citing the chicken sexer who can’t teach anyone how he makes his judgments because he does not know himself. And Stephen Schiffer supports one of his arguments against Jason’s Stanley’s view that know-how is inextricable connected to propositional knowledge by citing Mozart’s apparent ability to compose without being able to explain what he does. Sometimes experts support these views as well: Homer, recall, claims that the epic he recounts was given to him by the muses, Coleridge famously tells of how his masterpiece Kubla Kahn came to him in its entirety during an opium-infused dream, and in the Zuangzi, a wheelwright is quoted as claiming that his skill is something “you can’t put it into words, and yet there’s a knack to it somehow. I can’t teach it to my son, and he can’t learn it from me.”

What do I make of such views? To put it briefly, I think that there is more myth than matter to them. As scholars have pointed out, in a letter written nearly ten years before its publication with the infamous note about his dream, Coleridge speaks of composing the poem not in a dream but rather “in a dream like state.” Moreover, there are many indications in Coleridge’s notes that he was developing some of these ideas long before that letter was written. And, as I mention in Chapter one, although Mozart was undoubtedly incredibly gifted, there is little evidence that he had no understanding of what he was doing or that he composed without thinking about it. The famous letter in which he claims to see his entire compositions finished in his mind “at a glance” and “all at once” and that all the inventing “takes place in a pleasing

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lively dream” is now accepted as a forgery and his actual letters make no comments about magical inspiration (Spaethling 2000, also, The Myths of Mozart). Rather, as his sister has documented, he would spend endless hours mentally composing his music (though, after he had worked them out in his head, he did seem able to transcribe his compositions rather effortlessly and without thought.)

What about the proverbial chicken sexer who has no understanding of how he is making his judgments? He simply doesn’t exist. Nakayama et al (1993) makes this abundantly clear in an article explaining in painstaking detail just one of the intricate methods that chicken sexers learn (and as a side note, they point out, interestingly enough, even Aristotle had a theory of chicken sexing). I also spoke with Tom Savage, who worked in the poultry industry for ten years prior to his academic career. As he explained it,

Poultry sexers learned the technique of vent/cloacal sexing from a trained individual….In the US that skill was learned by attending a school for poultry sexing. Sexing chicks is a very exacting technique that requires a high degree of accuracy in determining the sex of a day-old chick or turkey poult, etc…. This technique (poultry sexing) is based upon the acquired ability to recognize/differentiate anatomic structures within the chick's cloaca.

And as for the art of wheelwrighting, although the philosopher David Velleman cites the Zhuangzi’s description of the skill of wheelwrighting proceeding without any understanding of how it is being done, the author (or authors) of the Zhuangzi was almost certainly not a wheelwright and perhaps never even spoke to a wheelwright; moreover, these “knack” stories may be best thought of as a metaphor for political rule rather than a recipe for individual action.

I am reminded of the rhapsode Ion who is Socrates’ interlocutor in the eponymously named dialog, “Ion.” Socrates tirelessly torments Ion with the accusation that what the poet or rhapsode does must be a form of madness since the poet cannot have knowledge of the subject matter of which he speaks. Ion’s responds by saying that Socrates’s although argument appears unassailable, he also tells Socrates: “I doubt whether you will ever have eloquence enough to persuade me that I praise Homer only when I am mad and possessed.” This line, which is sometimes cut when the dialog is anthologized is, as I see it, the most important line of the dialog. A priori reasoning may be valuable, but isn’t it sometimes worthwhile to listen to the experts themselves? Socrates not only doesn’t take Ion’s claims seriously, he apparently had never even observed Ion in action.

Of course, I am also neither a rhapsode nor wheelwright, however, based on my own experience in both philosophy and ballet, it is abundantly clear that, as with Savage’s description of the art of poultry sexing, experts in these arenas have a vast store of information that can be beneficially imparted to students and, moreover, that teaching helps, rather than hinders performance. For example, as a philosopher, in teaching I need to make difficult philosophical ideas both clear enough and engaging enough to capture the attention of my students, which helps me to better understand the ideas and devise ways of framing them in my written work.

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17 There is also a study showing that even without any training subjects can identify whether a poult is male or female with more than 50% accuracy. How do they do so? When asked, they say, “I noticed a bump, so I guessed male.”
18 Bychkov and Sheppard edited a collection with Cambridge in which this line is cut.
And this beneficial effect seems to hold true in more bodily expert skills as well. Ballet dancers often teach and this benefits them in a variety of ways: you see flaws in others that you might need to work on yourself, you see excellence that you might like to imitate and, particularly relevant to the master cogito, it helps one to conceptualize certain aspects of movement that might have become automatic. I once overheard an opera singer in café near Lincoln center comment: “I learn a lot from teaching; it’s helped me develop my technique. There might be something I never fully understood that my teacher said, but in teaching I might repeat it back to a student who understands and that makes me understand it better.”

To be sure, teaching also hurts. In ballet, it puts a strain on the body since one tends to demonstrate on one side more than the other, and one might end up demonstrating a step without being properly warmed up; in philosophy it takes precious time away from writing. However, there seems to be little reason to think that conceptualizing what was done afterwards hinders future expert performance. My friend Meg Potter, a former dancer with ABT and, where I met her, with Oregon Ballet, and current ballet teacher at Pacific Northwest Ballet School recently lamented, she would have danced so much better if only she “could have had this mind with that body.” This comment contained quite a bit; however, I presume that one thing she meant by it was that her conceptual understanding of dance as developed through her teaching career would have helped her during her performance days.

That said, sometimes retrospective conceptualizing of one’s actions might lead one to perform something very differently than one had; for example, a retrospective analysis might lead one to find a flaw that needs improving, which might lead one to try a new approach to a movement. In such a case, one might not be as proficient at this new way of movement as one was at the old way. But sometimes this is what improvement requires, and it is not a sign that conceptualization in itself hindered the performance. As I mentioned before, sometimes one needs to take a few steps back before moving forward. Ultimately, one wants to know whether it is best for an expert, when in the thick of things, to reflect upon his or her actions. And I think that neither the type of research performed by Beilock, where skill-focused attention is found to hinder performance, nor the type of work done by Flegal and Anderson, which investigated the effect of retrospective conceptualization on skill, should lead us to think that it does.

**Statistical Analysis of Choking**

One problem with the type of laboratory studies I’ve discussed is that they are not very ecologically valid, that is, they do not look at experts in real-life situations, if they investigate experts at all. One way to perform a highly ecologically valid investigation into the question of whether skill-focused attention interferes with performance, however, is to perform a statistical analysis of the conditions under which experts perform dramatically worse than would be expected. For example, is there a statistically significant decrease in skill in situations in which athletes are thought to be relatively more skill-focused? In a 1984 study, Baumeister and colleagues analyzed archival data from baseball World Series between 1924 and 1982 and argued that the answer to this question is “yes.” What they found was startling, for the data showed that the home team, which was widely assumed to have a large advantage, won only 39% of the time and made more errors than the visitors when they were on the verge of victory.

19 Some also advise abstaining from your own work for twenty four hours after a long session of grading undergraduate papers, so as to prevent any untoward stylistic influences
in the decisive seventh game, such as when going into the game with three out of five wins while the visitors were at two out of five. The explanation for this apparent counterexample to the widely accepted idea of a home-team advantage, according to the Baumeister et al., is that such a situation encourages players to focus on their movements, and such focus interferes with performance. In their words, “the impending redefinition of self (as champions), particularly in front of the home crowd, engenders self-attention, which causes performance decrements” (p. 86). This finding became known as “the home team choke,” and as it went counter to received wisdom, it quickly made its way into most every social psychology textbook.

Baumeister’s view is in line with the principle of interference, and Beilock favorably cites these results in her 2010 book. However, the results are at best controversial, for as Schlenker and colleagues later argued, when one expands the data base to include games through 1993, the home choke effect fails to be statistically significant, and, importantly, errors were found to occur much more when the home team is behind rather than ahead. Thus, contrary to Baumeister, errors do not seem to result from the self-consciousness that arises as a result of players redefining themselves as champions. And the idea of a home choke has largely disappeared from the psychology textbooks.

Schlenker’s reanalysis of the data should lead us to reject the idea that baseball players are more likely to choke when on the verge of victory in decisive games on the home turf than they will in earlier home games. The data, Schlenker argues, does not support Baumeister’s “kinder, more benevolent [choke] driven by visions of success, not fears of failure;” rather, he claims, his analysis of errors supports the darker form of choking, for he found that players make more errors when they are behind and thus he suggests that choking arises from the prospect of impending failure. This is entirely consistent with the master cogito, as it could be that the anxiety of impending failure leads to choking for a number of reasons other than that it causes players to think more about what they are doing; for example, the prospect of impending failure can cause a severe loss of confidence or it can cause the mind to fill up with irrelevant yet distracting thoughts, such as thoughts about how fans, friends, coaches and others will perceive them if they lose.

Moreover, high anxiety itself induces various physiological changes that appear to hinder performance. For example, the fight-or-flight response which anxiety produces shunts blood flow to the larger muscles, leaving cold feet and hands, and thus motor skills relying on the hands or feet are harmed. It can effect loss of peripheral vision and increase perspiration, both

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20 To be fair, Beilock does point out in a footnote that the Beumeister research is controversial.

21 In their reply to Baumeister (see footnote 3), they noted that the probability of occurrence of such an aberrant sequence in 11 decisive games out of a string of 35 games (the number of seventh games covered in our article) is $p = .0575$ if one uses a very high baseline of 60% expected victories and $p = .1264$ if one uses a more reasonable baseline of 55% expected victories (even this baseline is higher than the actual home winning percentage of 53.5% during baseball history). Neither of these probabilities justifies the conclusion that one should reject the null hypothesis using the traditional $p < .05$ level of significance. In fact, one would have difficulty convincing most researchers that a $p = .126$ is something that should be taken seriously given the controversial and counterintuitive nature of Baumeister’s desired conclusion. Further, these probabilities refer to only a subset of all games; overall, the probability associated with a home choke in decisive seventh games of the World Series was $p < .36$. So, if one looks at all the relevant World Series data, the effect is not even close. If the pattern was merely a chance run, there is no reason to search for an explanation. Given the rest of the data they reported, including the clear reversal of the home choke pattern during other time periods, I would not want to attribute meaningfulness to the results in that subset.

22 Relating this to my own experience in the dance world, excess nervousness could be ruinous; it not only interfered with my ability to concentrate but also had detrimental physiological effects, such as impeding circulation, for when I was extremely nervous—which fortunately occurred only rarely—my body, especially my feet, would be ice cold, a disaster for a ballet dancer.
Anxiety can also produce tremors in some individuals. All of these physiological effects of anxiety could be detrimental to performance regardless of whether such individuals are thinking about what they are doing. This all seems rather obvious, but it often seems to go unmentioned in the literature on how choking occurs because it increases self-directed focus.

That this is so is suggested by the ways in which the pharmaceutical drug popularly known as “beta blockers” affects performance. Beta blockers, in double-blind studies, have been shown to be highly effective in improving performance that relies on fine motor skills such as rifle shooting (find citation). Yet, though beta blockers are thought to reduce some of the effects of anxiety, such as tremors, they do not directly affect the experience of anxiety since they have only a direct autonomic effect (they do not pass through the brain-blood barrier). To be sure, knowing that you won’t shake (or even during a double-blind study thinking that you might have been given a drug that would reduce tremors) might have a calming psychological effect, and even seeing that you are not shaking at times when you normally would could help one to relax. So part of the benefit of beta blockers is likely psychological. Yet since individuals who use beta blockers sometimes report that they still feel just as nervous, it seems that at least another detrimental effect of anxiety—one that might seem obvious yet is apparently often ignored in the literature on how anxiety might cause choking due to “reinvesting”—is that regardless of whether it induces increased attention on one’s actions, anxiety has detrimental physiological effects. Thus, even if the experience of anxiety causes some to think about what they are doing, performing poorly under pressure might not be related to the thinking, but rather to the physiological effects of anxiety.

Schlenker acknowledges that his “darker” form of choking might be accounted for in a variety of ways, however, he also at least leaves open the possibility that part of the reason for the “dark choke” pertains to the principle of interference: that negative thoughts cause focusing on the details of movements, and that such a focus is detrimental to performance. “We agree with Baumeister (1995)” Schlenker tells us, “about many aspects of performance pressure, [such as the view that] focusing attention on the details of skilled performances can be disruptive (e.g., the expert pianist concentrating on precise finger movements).” So, although Schlenker has arguably disproved the idea of the home choke, he still seems to assume the principle of interference; yet, as far as the research we have just looked at, it seems possible that at least the right kind of self-directed thinking is compatible with performing at one’s best. Again, it is likely that some “darker” mental processes, such as confidence-undermining negative thoughts, may interfere with performance. Moreover, even overwhelmingly positive yet distracting ones may be harmful. Indeed, any sort of focus that takes away from what the expert ought to be focusing on can be a hindrance. Yet there is no reason to hold that, in general, focusing on what one is doing—even focusing on the details of one’s movements—is disruptive.

Baumeister holds, like Beilock, that that pressure induces self-directed, or skill-focused attention and that such attention is detrimental to performance. Yet during training expert athletes and performing artists often engage in such focus and thus there is no reason why this type of focus should disrupt performance. Of course, unless a basketball player has recently had

Performing jumps and battement tendus (the staple of the ballet warm-up) in the wings, donning down-filled booties, stretching, nothing would work. And so, regardless of what was going on in my mind, I was not able to perform at my best since my body was not properly warmed up.)
knee surgery and has been spending long hours focusing on rebuilding the relevant muscles, concentrating deeply on the movements of her left knee cap might get in the way of shooting a basketball, even for an expert. If that is all that Schlenker means, I am in agreement. However, if he means to endorse the principle of interference as a principle about skill-focused attention quite generally, I object, for it seems that experts in action do this all the time. And not only that, increased skill-focused attention, rather than being the effect of anxiety and the cause performance choking seems to be employed by athletes to help them cope with pressure. Here is some research that brings this out.

**Questioning the assumption**

Although the idea that pressure induces choking because it provokes experts to focus on or think about what they are doing is a widely accepted theory about the relationship between performance anxiety and choking, there is a competing theory, which far from supporting just-do-it, runs counter to it. This is the view, sometimes referred to as “distraction theory,” that high pressure draws attention away from the task at hand and to irrelevant aspects of performance, such as worries over how performance will be judged and the possibility of failure. Moreover, anxiety is thought to impair working memory and executive control (e.g., Ashcraft & Kirk, 2001; Darke, 1988; Derakshan & Eysenck, 1998; Eysenck et al., 2005; Hayes et al., 2008; MacLeod & Donnelan, 1993), both of which are important components of, among other things, planning and strategizing, or, in other words, thinking while doing. Researchers who explain choking under pressure in terms of “thinking too much,” accept that anxiety can have distracting and negative cognitive effects as well, but as they see sports skills as not highly depended on cognition (since the skill, as they see them, are after all automatic) they feel the need to unearth another account. But if one holds, as I do, that thought is an important component of expert action, there is no need to account for choking under pressure in terms of anxiety provoking thinking. Anxiety might, among other things, lead one to think about what one is doing, but on my view, the thinking need not interfere. And, in fact, there is some evidence that expert athletes rather than suffering because of the self-directed thought anxiety provokes, use thinking as a tool to cope with anxiety.

That experts increase their focus on the task at hand in order to cope with pressure is suggested by studies carried out by the sport and exercise psychologist Adam Nicholls and colleagues that asked elite athletes to keep a diary of stressors that occurred and coping strategies that they employed during games, as well as to rate, on a scale of 1 to 5, how effective these coping strategies were. Though small-scale, the study indicates that a common method of dealing with stress involves redoubling both effort and attention and that such methods are perceived as more effective than other methods. For example, in a study of eight first-class professional rugby union players over a one-month period during which they played four tournament games, Nicholls et. al found that, although the players dealt with the pressure in a variety of ways, “the most effective coping strategies that were used on a frequent basis were

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increasing concentration on task and increasing effort.”  

There are limitations of diary studies, as Nicholls et al point out. For example, as is common of longitudinal studies, diary studies typically have a high dropout rate. Moreover, some research suggests that a diary method inspires subjects to report only concrete and discrete events and ignore more complex problems (Folkman & Moskowitz, 2004). Nonetheless, such studies fail to suggest that reducing thinking or effort is an effective strategy for dealing with stress, but rather suggest the opposite.

Nicholls’ results are consistent with the findings of another sports psychologist Dave Collins, who, along with colleagues (Collins, Jones, Fairweather, Doolan, & Priestly, 2001) measured kinematic aspects of elite weightlifters’ performance during training and competition and questioned these athletes about their conscious use of any movement-change strategy in response to competitive pressure. Collins et al. (2001) examined movement variability in seven elite male athletes from the British Olympic weightlifting under both low pressure situations (practice) and high pressure ones (competition) and found that although the participants modified their movements as a result of competitive pressure, such modifications did not diminish their overall performance.

Of course, one may wonder whether athletes, or anyone for that matter, have accurate insight into what goes on in their minds. Even in Beilock’s work, it is difficult to know whether the participants in her study were actually focusing on what they were supposed to be focusing on. Although presumably, to be able to accurately report which side of the foot had just been in contact with the ball, the participants in her study needed some conscious awareness their feet, we are not told how accurate soccer players were at making such identifications. Nevertheless, perhaps merely making the attempt to report this indicates that they were focusing on their feet. Nicholls’ and Collins’ work, in contrast, depends on what seems to be the less reliable post-performance reports. How can we tell that the rugby players or weightlifters actually were thinking about what they claim to have been thinking about? It seems that we can be less certain of this than of the occurrence of the relevant mental processes in experiments such as Beilock’s. Yet there is a tradeoff between reliability and what researchers call “ecological validity,” and Nicholls’ and Collin’s work, while perhaps dependant on less reliable indicators of conscious thought in their participants, is more ecologically valid because it looks at experts, veritable experts, in real-life settings, asking them, while playing, to do nothing other than what they would normally do. In contrast, saying “stop” out the exact moment one finished the follow-through of one’s golf swing (Beilock p. 10) is not something that expert golfers do in tournaments.

What would seem to be correct is that although some thoughts could hinder, the expert engages in thoughts that help. This is precisely the conclusion of the study performed by Toner

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26 Might their performance be affected by the fact that they knew that after playing, they would need to record what was going on in their minds? It certainly might, however, although this might be relevant to the question of how much athletes think during games which they are not asked to do this, I don’t think it is relevant to the question of whether thinking interferes with performing. Even if the athletes ended up thinking more than they normally would, it would seem that their reports of the effectiveness of their thoughts would not be significantly affected.
27 [When Paying Attention Becomes Counterproductive: Impact of Divided Versus Skill-Focused Attention on Novice and Experienced Performance of Sensorimotor Skills, p. 10]
28 For further criticisms of the ecological validity of such experiments see (Gucciardi & Dimmock, 2008, p. 49) and (Wilson, Chattington, Marple-Horvat, & Smith, 2007, p. 454).
and Moran (2011). In this study, they instructed expert golfers to monitor their clubhead and report after each putt exactly where on the putter face they thought they had struck the putt (and after every fifth putt they were reminded participants to maintain this focus.) This, as you might guess, interfered with performance. However, when holding balls while engaging in a think-out-loud protocol (which indicated that players engaged in numerous skill focused thoughts), their performance was just as good as when they were asked to simply just hole balls. The researchers conclude, not that experts should just do it, but “that golfers may need to choose their swing thoughts very carefully because focusing on certain elements of movement, such as the impact spot, could lead to an impairment in performance proficiency” (680).

Individual Cases illustrating the Master Cogito

According to the just-do-it principle, and more specifically, the principle of interference, thinking interferes with doing; however, as we just saw, diary studies suggest that increased attention and effort can be beneficial when anxiety is present. Thus it seems reasonable that in some situations, rather than causing choking or suboptimal performance, thinking actually helps experts to cope with anxiety and thereby to prevent the poor performance that high anxiety may cause. Moreover, we also saw that that protocol studies indicate that experts do think in action. Let me now present a few “case studies” that illustrate these conclusions.

The classical guitarist and mathematician Tobias Schaeffer once explained to me how he was able to avoid choking during performances. He said that when he was younger, despite the most assiduous practice, he used to fumble and sometimes blank out during performances. It seemed to him that although he would rehearse to the point where he could play a piece more or less automatically, during performance he would end up, as he described it, “thinking about what I was doing.” So far, this sounds like a defense of the just-do-it principle, but in discussing this problem with his instructor, the classical guitarist Andreas Koch advised to start thinking about his movements during practice. At first this slowed down his playing, but eventually he was able to direct his attention to his movements and think about what he was doing while playing in tempo. And by maintaining this sort of attention during performance, he said, that not only was he able to avoid the dreaded performance choke but that his playing improved.

Schaeffer, according to his own account, is thinking in action. Moreover, his account provides a reason for why such thinking is important: if one’s actions become so automatized that the conscious mind no longer knows how to do them, any glitch which brings consciousness to the fore could result in blanking out, which in a guitar performance means suddenly forgetting how to proceed and thus needing to improvise until one gets back on track. One way to avoid this problem is to prevent the mind from entering the picture. However, another, if Tobias is correct, is to follow the advice Koch gave Schaeffer: keep the movements in the conscious mind.

The importance of keeping ones actions in the conscious mind was something the cellist Ingal Segev told me about as well: “my teacher [Bernard Greenhouse], who was a student of [Pablo] Casals would say ‘don’t let the music lead you; you need to direct it.’” The idea that you get lost in the music and simply let it lead you was, she thought, a mistake as it precludes thought. Dreyfus and Dreyfus, however, tell us that the expert, as opposed to someone who is merely proficient, no longer needs “to think about what to do” (2004, p. 253). But for Schaeffer, and Segev skillful playing involves extensive conscious thought about what to do and when to do it.

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The violinist Arnold Steinhardt’s teacher, Ivan Galamian, also encouraged Steinhardt to focus on the details of his movements. Indeed, as Steinhardt explains, Galamian wanted him at first to “concentrate on the finger motions of the bow hand by doing them without the violin” (pg. 29). 30 His roommates, he said, wondered how he was going to become a musician without making any sound.

These accounts by musicians who have found it helpful to focus on the fine details of their movements, even during performance, are not so different from Timothy Gallway’s account of his best tennis-playing. Earlier I quoted Gallway as a popularizer of the just-do-it principle, and to be sure, his “all time bestseller” The Inner Game of Tennis pays homage, particularly in the opening pages, to the idea that you are playing at your best when you are “playing out of your mind.” Nevertheless, Gallway, who had been a serious tennis player himself, also emphasizes the importance of some very specific skill-focused monitoring in tennis. He advises that during practice, you should “get to know the feel of every inch of your stroke, every muscle in your body.” This will enable you, he says, to focus on a few essentials during a tournament. He explains,

> when you increase your stroke speed to normal and begin hitting, you may be particularly aware of certain muscles. For instance, when I hit my backhands, I am aware that my shoulder muscle rather than my forearm is pulling my arm though….Similarly, on my forehand I am particularly aware of my triceps when my racket is below the ball.

According to Wulf, “if experienced individuals direct their attention to the details of skill execution, the result is almost certainly a decrement in performance.” However, if Gallway’s description of how he plays doesn’t count as directing one’s attention to the details of skill execution, I don’t know what does. 31

The swim coach Alan Varner told me that he coaches his swimmers to not worry about the mistakes they have already made, but that this doesn’t mean that they should swim with their minds blank. Rather, he explained, each swimmer needs to focus on what is going to produce the best outcome. When he was swimming competitively, he would focus primarily on his hips, he said, and how they were driving his stroke. Of course, a myriad of other aspects of movement needed to occur more or less automatically for him to be able to maintain this focus. But, as he sees it, the focus was an essential element at his best meets.

This delicate balance between thinking and monitoring, but not in the wrong way, is also emphasized by the professional tennis coach David Breitkopf:

> I encourage ...[my students] to have a mantra-like phrase that they can use over and over again to reach their calm, optimum level. This mantra isn’t just a phrase that calms you, but also is intricate to the stroke itself, and allows every other part of the stroke to work properly. Just as an example—get the racket below the ball. This implies much more than the phrase itself. It means I’m watching the ball, it also means that I will likely sweep the racket head up to the ball and lift the ball above the next. But it also implies because of the way I grip the racket that I will put topspin on the ball to keep it in play. I can get all

31 Morgan and Pollock (1977) also report that world-class marathon runners almost invariably claim that during a race they are acutely aware of their physiological condition.
this in because I said this one phrase, and the rest follows. So in point of fact, I’m thinking, but I’m thinking efficiently (personal communication).

Contrary to the Dreyfus view of skill, the mind is present, for on Brietkopf’s view, thinking and monitoring one’s actions, if it’s done right, is essential to peak performance.

Given, then, that there is both empirical and anecdotal support for the idea that attention to movements and sometimes even the details of movements occurs at an expert level, and indeed that such attention can help mitigate anxiety, and moreover, given that the studies that purport to show that at an expert level high anxiety is detrimental to performance because it increases skill focused attention are open to alternative explanations, I think it is reasonable to reject the principle of interference. Rather than impeding performance, experts seem able to improve performance by focusing on what they are doing.

Steve Blass Disease

Though not focused on the relation between anxiety and choking, the philosopher Hubert Dreyfus supports the idea that at an expert level of performance, attention to and conscious control over one’s actions degrades performance in part by citing the fate of New York Yankees’ former second baseman, Chuck Knoblauch. As I mentioned in Chapter Two, Knoblauch, a Gold Glove winning player at what would seem to be the height of his career, suddenly developed severe throwing problems, sometimes being barely able to toss the ball and at other times throwing it outrageously far out of bounds. What happened to Knoblauch? Dreyfus’s (2007) analysis of the situation is that Knoblauch was thinking too much; as Dreyfus puts it, he “couldn’t resist stepping back and being mindful” (354). Expert skill, according to Dreyfus, is “nonminded,” and Knoblauch’s trouble, as Dreyfus sees it, is that he tried to think about what should happen be happening automatically(2007a, 354). The journalist Malcom Gladwell presents a similar analysis. Just like the 2005 WTA Tour champion tennis player tennis player Jana Novotna who “faltered at Wimbledon…because she began thinking about her shots again,” Gladwell tells us that Knoblauch, “under the stress of playing in front of forty thousand fans at Yankee Stadium, [found] himself reverting to explicit mode.”

John McDowell, who challenges Dreyfus’s view that when Knoblauch played at his best his actions were not conceptualized, agrees. On McDowell’s view, even though in throwing efficiently to first base, Knoblauch was “realizing a concept of a thing to do,” he lost his ability because he “started thinking about ‘the mechanics,’ about how throwing efficiently to first base is done.” More generally, McDowell (2007b) tells us, “this kind of loss of skill comes about when the agent’s means-end rationality tries, so to speak, to take over control of the details of her bodily movements, and it cannot do as good a job at that as the skill itself used to do” (367-8).

As I understand the situation, however, it is not at all clear that being mindful is the culprit for Knoblauch. There is little indication that Knoblauch, or any of the other major league players who have been struck with what is called “Steve Blass disease” (named after a player who suffered from a similar fate,) believe that the cause of their throwing problems is related to their thinking about what they are doing. Rather, they tend to say that they don’t know why

33 New Yorker 2000 August 21& 28 “the Art of Failure”
34 Steve Blass made his Major League Baseball debut in 1964, and upheld a very strong strikeout record until the 1972 season when his pitching suddenly and inexplicably deteriorated. His game never recovered, and he retired from baseball in 1975. The expression, “Steve Blass disease,” has subsequently been used to refer to a major inexplicable change in a player's skill level.
they can't throw and, indeed, Knoblauch has criticized the media's claim to understand the cause of his condition.  

Although philosophers such as Dreyfus and McDowell seem to agree that with the view found in the popular press that Knoblauch’s utter failure is due to his attempt to explicitly analyze or think about his movements, the question of the origin of Steve Blass disease in the scientific community is very much an open one, and the few theories that do attempt to account for it do not attribute it to misplaced thinking. For example, Adler (2007) speculates that, as with what are referred to as “the yips” in golf, some cases of the disease could involve a focal dystonia, a neurological condition involving involuntary muscle contractions. David Grand and Alan Goldberg (2011) argue that it is a form of post-traumatic stress, and that players who suffer from it are holding earlier traumas in their bodies, and treat it by, in part, desensitizing them to the trauma. 

Steve Blass (2013), in his autobiography talks about being confident that the problem would work itself out in the beginning.

It was not bad in the beginning by any stretch, and my struggles were more of a gradual decline. I had had slumps before and I didn’t have any particular anxiety early in the season…so I thought, OK. It’s not working now, but we’ll get it straightened out. We’ll be fine. Just keep throwing and it’ll click. It’ll take care of itself.

So it does not seem that there was overwhelming anxiety that was causing the problem. Yet things got worse and he found himself wondering what could be wrong:

There were a lot of nights when I would just come home and sit in the backyard wondering why all this stuff was going on and what was happening. I’d try to find out if in quiet times I could sort it all out, but I just couldn’t. (12-13)

It would seem that if overthinking were part of the cause of his problems, this would have occurred to him, but although he mentioned numerous other theories about what was causing what he called his “control problem,” never once in the book does he mention that it might have been due to thinking too much about what he was doing. And he mentions many approaches he tried to counteract the problem:

I tried every possible remedy for my control problems. There were times when we had two projectors showing me pitching good and showing me pitching bad side-by side, looking for clues on how to improve my mechanics.”

He took part in a visualization process where he visualized the ball going out of his hand to where he wanted it to go (19); he tried transcendental meditation, which was popular at the time; and—after he received a letter from a hunter who claimed that the only time his aim was off was when his underwear was too tight—he even tried wearing looser underwear. But nowhere in the book does he say that he tried to think less about what he was doing. His mind, he does say, was distracted:

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35 [find citation in my bodily awareness paper]
Before my control problem I had the ability to just concentrate on the immediate task at hand, which is a wonderful thing for an athlete. I could block out family, world hunger, or anything that was going on, because of that focus. That focus all went away and everything was occurring in my mind. I was like an antenna.

This, if anything, sounds like the problem has to do with not being about to think about what he was doing. In the book, he emphasizes that that the disease named after him is inexplicable but he claims, ultimately, that he came to see it as specifically “not a psychological problem” but rather as a problem of “pattern recognition.”

**Just-do-it as a last resort**

The considerations I have canvassed in this chapter should, I think lead us to reject the principle of interference, the principle that says that thinking in action infers with expert skill. Nonetheless, perhaps for some with overwhelming performance anxiety, the only way to cope is to make the mind go blank. An empty mind is not a worried mind. But there are various reasons for why, unless all else fails, one should not attempt to perform with an empty mind. One, quite simply, is that given my view, although an empty mind is not a worried mind, it is also not a mind that is thinking about what it needs to be thinking about and thus an even better performance might result from thinking (but not being overly anxious) and work by Hull suggests that one way to mitigate anxiety is not to not think, but, actually, to think. The other problem is that it is at least not clear that one can deliberately achieve a state of emptiness, and thus, acquiring an empty mind is not as controllable as thinking. I can deliberately focus my mind on various aspects of my performance, but it seems that as Dreyfus and Kelly themselves point out, achieving the state of letting things just happen is something you can no more do than making yourself fall asleep. When the stakes are high, I would go with what I can control. Moreover, when in a state of mindlessness, at any moment, it seems, the mind might jump back into the picture and thus, as Tobias’ example illustrates, it is best to have the mind present all along. The high diver standing on the board still for a moment before she jumps is, I imagine, going over the dive in her mind and thus is painting her body with thought so that the conscious mind will be present in the dive as well.

Of course, it might be that when things do start to go wrong, extra attention is called forth. As such, poor performance might be associated with attention. This might lead one to think of the attention as causally detrimental, yet it may be that the choke that causes the heightened attention rather than such attention causing the choke. And, as I have argued, focusing on their skills, rather than effecting a choke, seems to help expert musicians and athletes cope with high-pressure situations. Of course, one cannot attend to every detail and thus some aspect of the performance will need to be automatic. But if Tobias’s, Steinhardt’s and Galway’s examples are correct, the level of focus is at times much lower than promoters of the just-do-it principle have thought.

**Does similar consideration apply to mental expertise?**
Although I have been focusing on the skills of the athlete and those of the performing artist, I started this chapter with an example from the skill of debate. I do not draw a sharp line between these two types of skills since I hold that the expert athlete is an expert not just in making her movements but in thinking about her movements. Nonetheless, we can distinguish activities like playing the violin in which excellence depends, among other things, to a large degree on certain motor skills, from something like debate, in which motor skills are to a large degree (though not entirely) irrelevant to performance. Does the principle of interference fail to apply to skills like debate and public speaking as well?

According to Dreyfus (2013), “in total absorption, sometimes called flow, one is so fully absorbed in one’s activity that one is not even marginally thinking about what one is doing.” Dreyfus cites Merleau-Ponty who writes similarly of a master orator:

> The orator does not think before speaking, nor even while speaking; his speech is his thought. The end of the speech or text will be the lifting of a spell. It is at this stage that thoughts on the speech or text will be able to arise. (pg. 28)\(^\text{36}\)

However, is this an accurate description of expert oration? Or is Heidegger more on the mark when he claims that when a lecturer enters a familiar classroom, the lecturer experiences neither the doorknob nor the seats; such features of the room, for the lecturer are “completely unobtrusive and unthought.” All of such things would indeed seem to be beneficially unthought so as to leave plenty of mental space to think about the lecture.

At least as far as I can tell, just as thinking in action seems to prevent missteps in sports, thinking in action may prevent mishaps in more sedentary forms of expertise. As a philosophy professor, although I don’t learn, say, the ontological argument for the existence of God in my body in the way that I might learn choreography, I think that there are philosophical ideas or definitions that one ends up spouting off rather automatically. Yet, rather than advising philosophers who are, say, preparing for an interview or getting ready to present an important talk to not think very much during the process and “just let it roll” lest the thinking causes them to blank out, I would say that the better advice is to be like the high diver on the board prior to her plunge: prior to the event, they should review what they have to say so as to make sure that it is there in the conscious mind, and once there, thinking about it will not interfere with doing their best. I have noticed that excellent speakers do this. No matter how well they know the material, they will consciously review it before an important talk. And, no doubt, this is something I ought to do more often. But reviewing a talk I know well is so painfully dull that I usually can’t bring myself to do this. I do not doubt, however, that I would be a better speaker if I did. And likely Perry would have done better in the debate if he had done this as well.

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