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by Michael Kardas and Ed O'Brien

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You can find just about any skill you want to learn on the internet. Steve Jobs's captivating presentation style, Steph Curry's jumper, Michael Jackson's moonwalk — all of these are easily accessible. Clearly, instructional videos, how-to guides, and online tutorials have changed the way we learn.

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Or have they? Watching expert performances might make you feel that you could perform similar skills. But new evidence suggests that learning by observation may, at times, be illusory. Observers come away feeling confident that they're well prepared to try the task out themselves, but when they do, often they're not better than they were before.

Many Skills Are Easier Seen Than Done

In six experiments, recently published in Psychological Science, we tested the hypothesis that people overestimate how much their abilities improve after extensively watching others perform. In one experiment, 193 University of Chicago students visited our lab for a dart-throwing study. First, they watched a video of an expert performer throwing a bulls-eye, either once or 20 times consecutively. Second, we divided participants into *predictor* and *performer* conditions. Predictors estimated how many points they would earn (between 0 and 100) if they were given one throw right then and there. We compared these estimates with the actual scores of performers, who were the ones throwing one dart. Predictors who watched the expert performance 20 times in a row believed they would earn a higher score than predictors who watched the expert performance just once. In reality, however, high exposure didn't matter at all: Performers earned similarly low scores regardless of how many times they had watched beforehand. Watching experts improved their confidence but not their ability.

We replicated these findings in another experiment, this time involving the moonwalk. One hundred participants (a mix of university students and everyday Chicagoans from around the city) watched an expert doing the moonwalk. They were randomly assigned to see a moonwalk video either once or 20 times consecutively. They made predictions about their own moonwalk abilities and then attempted the moonwalk themselves, right then and there. We video recorded their moonwalks and later showed these attempts to an outside group of judges, who were blind to the number of times that performers watched the training video. Again, observing experts improved dancers' confidence (participants who watched 20 times and participants who watched once both predicted their scores, but the first group's predicted scores were higher) but not their ability (the judges gave similarly low ratings to both groups of participants).

Another experiment replicated this effect in a different domain: playing a computer game. We had 270 online participants watch a person play a tracing game, where the gamer uses the computer trackpad to trace through a digital maze as quickly and accurately as possible. After watching, people predicted their own scores, from 0% to 100%, and played the game for themselves. People tended to overestimate their scores no matter how many times they watched, but people who watched 20 times consecutively were significantly overconfident in their abilities. Watching the expert performer made people think they too would play better, but they didn't.

What is it that causes people to be so overconfident? When people watch videos, they *see* the performer's technique, but they don't *feel* it themselves. It's one thing to memorize what steps to take, but another thing to experience how those steps feel upon taking them. People often miss

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subtleties while watching, and so people are prone to underestimate the complexity of the skill, and overestimate their own abilities, after watching experts.

We confirmed this mechanism in a pair of experiments. First, we examined the role of *seeing*. We had 400 participants watch a video of a tablecloth trick, where a person yanks a tablecloth out from beneath dishes and silverware without knocking them over. This time we randomly assigned some people to watch the full video, depicting both the expert performer and the dishes, and assigned others to see only the dishes. People felt more confident after watching 20 times repeatedly, but *only* if they could see both the performer and the dishes. Seeing the dishes stay in place was not enough. People feel overconfident, then, because they focus on the performer's techniques while watching.

But why do people fail to recognize how little they've actually improved? To find out, we examined the role of *feeling*. We had 145 participants watch a video in which a person juggles three bowling pins. After watching, we measured everyone's confidence in their ability and assigned some people to hold three bowling pins for themselves; some to read technical information such as the pins' weight, length, and diameter; and some to try to explain the expert's technique. People tended to feel overconfident after watching, but holding the pins helped people recognize the gaps in their knowledge, reducing their confidence. In contrast, people who read technical information or explained the expert's technique remained overconfident despite having additional time to think about the skill. People seem to not appreciate the feelings of the performance while watching it, and this can undermine their ability to form accurate beliefs about their abilities.

Our findings suggest that learning by seeing may be less effective than we often believe. Across a range of skills, people felt that they had improved from merely watching — even when they hadn't yet practiced the skill themselves, and even when they had not improved much at all. This raises the possibility that after watching a performance, people might jump right into skills that exceed their current abilities or budget too little time for practicing them.

It's important to keep this in mind, as employees today have ample opportunities to watch and learn from afar. From online courses (including MOOCs) to VR training videos, today's workplace offers many outlets to "preview" what real, on-the-ground experiences will be like. But how will it really feel when you transition from watcher to doer — as you're actually pitching in the boardroom, interacting with the team overseas, or figuring out complex new software as the clock is ticking?

How You Watch Matters

We're not saying that YouTube's tens of millions of instructional videos are useless. You can still learn to speak more like Jobs — and help your team do so — if you follow a few evidence-based strategies.

First, set aside time to practice — and plenty of it. There's likely more to the skill than initially meets the eye, and so you may need more reps than you think before you're finally proficient. You can prepare not only by watching but also by reading and thinking about the skill. We find that reading

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and thinking are less likely to inflate people's confidence before they give the skill a shot, so these strategies may pose less risk that you'll later overestimate your abilities.

Second, start small. The first time you practice a skill, you might notice complexities that you missed while watching — just like how holding the pins led people in our experiments to realize that juggling them would be no simple task. Account for this ahead of time by starting with simpler skills and then building up to the complex ones that caught your eye in the first place. Before you attempt your first triple axel, it pays to be steady on the ice.

Third, engage in *mixed* practice. Don't plan to watch now and practice later; that is what caused people in our experiments to develop the (illusory) feeling of "I bet I could do that!" Watching without practicing breeds confidence but not necessarily learning. Instead, mix watching and practicing. People get more out of watching after they have already attempted the skill, so try the skill yourself and then revisit your favorite how-to videos frequently to refine your technique.

What all this highlights is that learning a new skill isn't as simple as opening YouTube and watching a few videos. In fact, doing so could backfire — provided you set your sights on skills that are too challenging or deadlines that are too imminent. Learning skills takes time, and leaders and managers especially should make sure they're encouraging employees to round out any digital training with first-hand practice experience.

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