

COGNITIVE BIAS

EXPERIENCE VS EXPERTISE

Although not entirely unique, the field of kinesiology struggles with disseminating information in part because people are so interested in it. Even worse than the effect of WebMD on medicine — where every symptom means you are dying, people grow up in sporting environments internalizing ill-informed thoughts and perspectives early in life and then continue to not only hold onto those thoughts and perspectives throughout their life but also choose to continue to share them with others. The same individual who seeks out your expert advice (in some cases even paying for it) will reject or ignore that advice if it conflicts with what their friend 'who works out a lot' said.

Topics: Experience — Confirmation Bias — Expertise —
Dunning-Kruger Effect — Halo Effect

Experience — Perspectives about the world gained through involvement and interaction with particular situations.

Consider the behaviors an individual in their 30s to 60s might choose to engage in if they decide to 'get healthy.' What are the specific things they choose to do, and how do they implement them? Most individuals retrospectively look back on their youth — specifically between the ages of 16 and 21 — as a period when they were 'at their best.' Although during those ages they may not have been satisfied with their physical appearance and attributes, now during adulthood they wish they could get back to looking and feeling like that. Interestingly, a common perception is that if they engage in the same types of health behaviors they did when they were young, that they could attain those outcomes. Former athletes and veterans, for example, exhibit a tendency to attempt to replicate workouts and training programs they did 'back then' without understanding that, in many cases, the programs were not designed for the outcomes the individual is now attempting to attain.

Another common phenomenon is the reliance upon **vicarious experience**. Vicarious experience refers to perspectives that are acquired through the involvement and interactions of another individual, rather than through the individual's own personal involvement and interactions with a situation. Either in the absence of having prior lived experience, or in addition to their own experiences,

individuals will take on the perceptions of the other individual.

Although this is more commonly associated with someone the person knows, we can also observe this effect with 'fitness influencers' dispensing advice about how to train so that you can look like them. The issue is that there is a substantial difference in the specific behaviors that are engaged in to begin acquiring healthier attributes and those behaviors that are engaged in to sustain or refine those attributes. There is a large genetic component in the extent to which resistance training will result in an increase in muscle size and how physical activity can influence body composition. Further, this ignores the effects of developmental stage, which might be highly influential in determining the extent to which a particular stimulus will result in the outcome of interest or might result in a risk of injury.

Confirmation Bias — The tendency to selectively value information that confirms and reinforces existing beliefs and perspectives.

Research into decision-making behaviors gives us some insight into factors that are relevant to this resistance to information; however, they paint a relatively depressing picture in many respects. Individuals with substantial lived experience exhibit the tendency to do less information searching when attempting to make a decision, as they feel that their experience provides sufficient information to make informed decisions. The exception to this is that when the individual encounters an 'echo chamber' (a social media term describing a filtering effect where the individual is only presented with a narrow range of information already conforming to their beliefs or perspectives), they engage in similar amounts of information searching as individuals with very little lived experience. An individual with a lot of lived experience appears to specifically discontinue information searching when presented with information that conflicts with the beliefs and perspectives they already hold.

As long as the individual's beliefs and perspectives are accurate, this tendency reflects an efficient strategy (seek out information, find information, encounter information that no longer makes sense, stop searching — as the new information can no longer be trusted). But unfortunately, there is a massive body of research showing that not only are humans bad at properly interpreting the surrounding world, but we also are frequently unaware of our own motivations and behaviors. Psychologists, motivational coaches, and salespeople specifically make careers out of this.

Expertise — Perspectives about the world gained through exceptional knowledge, understanding, and skill of a particular domain.

This is not to say that individual experiences are irrelevant or without value. The issue is blindly trusting experience while simultaneously rejecting new information that might alter our understanding of those experiences. While it is popular to blame social media for the issue, this phenomenon has existed long before social media, and the reality is that we also struggle with conceptualizing the vast differences in knowledge, understanding, and skill that exist between experts and non-experts. Consider the case of chess, which provides the benefit of very clear classification systems denoting levels of expertise and millions of recorded games from which we can draw evidence.

- An average adult with no chess training will beat the average 5 year old with no chess training 100 percent of the time.
 - An above average club chess player will beat the average adult with no chess training 100 percent of the time.
 - A grand master chess player will beat the above average club chess player 100 percent of the time.
- ⇒ Top performers in an intellectual domain outperform even an experienced amateur by a similar margin to that which an average adult would outperform an average 5 year old. To that expert, there is virtually no difference between an experienced amateur and an untrained 5 year old.

In chess, skill is quantified (characterized, measured, assessed) by the individual's ability to comprehend a situation, take into account the factors that matter, and choose a move that improves their situation. This is also true of experts in other domains, such that their domain-specific knowledge and understanding are so far beyond that of a typical individual that their thinking is almost impenetrable. As a result, it is not uncommon to hear remarks such as "that makes no sense", "this person doesn't know what they are talking about", etc.

It gets worse in that we also have evidence that experts exhibit a tendency to assume that most typical individuals have a greater understanding of their domain of expertise than they actually do. From the experts standpoint, their level of knowledge does not feel like it is that much more than what most non-experts know — even when the experts knowledge was formed through decades of specialized education and relevant experiences. This creates barriers to effective communication, as the expert is not sufficiently bringing the

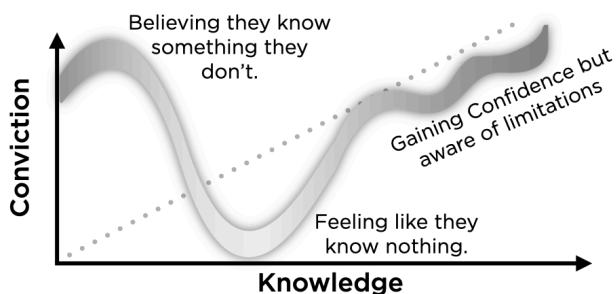
information down to the typical individual's level of understanding.

The Dunning–Kruger effect — A cognitive bias whereby individuals with low ability/knowledge in an area tend to overestimate their ability/knowledge of that area.

People may believe they possess accurate knowledge in a domain that is, in fact, misguided and misinformed. Conceptualized in the late 1990s, the Dunning–Kruger effect attempted to explain why individuals with very little knowledge of a topic exhibited particularly strong conviction that they were highly knowledgeable. Dunning–Kruger describes a cognitive bias that results in individuals believing they know something that they do not. In essence, this bias reflects a cognitive blind spot which makes it particularly difficult for an individual to even recognize their lack of knowledge. When presented with information that conflicts with what little knowledge the individual does have, this cognitive blind spot also makes it difficult to properly consider the information, as it seems to make 'no sense' and can therefore be easily rejected. This phenomenon creates a 'perfect storm' whereby individuals with the least knowledge are also the most likely to attempt to disseminate it and are the least receptive to information that might change their opinions. This underlies the general wisdom of statements along the lines of "the loudest voice in the room is rarely right."

Conversely, Dunning–Kruger also observed that subject matter experts exhibit a tendency to have very low conviction regarding their own knowledge. The more an individual acquires knowledge of a topic, the more they realize that they know very little. This phenomenon can be particularly troubling, as the individual experiences self-doubt and insecurity over the lack of knowledge despite clear evidence that they know substantially more about the topic than they did before.

Figure: Dunning–Kruger effect.



Halo effect — A cognitive bias whereby inaccurate characteristics are assigned to a subject based upon other known characteristics.

Our field also struggles with the issue of properly characterizing who is actually an expert. This creates a cascade effect in creating confusion regarding (1) whom we should be seeking out information from and (2) how we should value that information. Frameworks for trying to understand and rectify this issue generally center around the idea that this is the result of a Halo effect, whereby certain assumptions are made about an individual based upon the characteristics that we do know. A prime example of this is in collegiate and professional sports, where groups will specifically assume the expertise of an individual because they were a former athlete in that sport at the collegiate or professional level (what were your coach's qualifications?), or assume that an individual who is always working out must also have a great deal of expertise in working out. Conversely, there are a multitude of examples where a team or group has rejected the expertise of an individual because they do not look a certain way or were not a former elite collegiate or professional athlete/member of the group, only to have that individual go on to be a highly sought after specialist. Again, to be clear, this is not to say that former elite collegiate and professional athletes/members of the group cannot be experts, just that their expertise **cannot be assumed**.

A related phenomenon is that humans have a tendency to assign greater levels of expertise to individuals who are attractive. This has given rise to gym-tok/fit-tok social media influencers (to be clear, this happened well before the internet was a thing — Charles Atlas, Richard Simmons, Jane Fonda, Billy Blanks, Kathy Smith...), who distribute health, wellness, and fitness advice, often with little to no expertise (or, in some cases, very skewed expertise). Lastly, there is financial benefit associated with ambiguity in expertise. Individuals who are former athletes/members of the group, are attractive, and who can tell a good story are highly influential in selling products. Companies that can convince such individuals about the supposed benefits of a product can then utilize them to further sell it, even when the product does not actually do what it claims.

Additional Resources:

Dunning, D. (2011). The Dunning-Kruger effect: On being ignorant of one's own ignorance. In *Advances in experimental social psychology* (Vol. 44, pp. 247-296). Academic Press.

Past Perceptions

- Individuals in their 30's to 60's tend to retrospectively look back on their youth as a period when they were 'at their best'.
- Typically referring to some point between 16 and 21.
- A common perception is that if they engage in the same types of health behaviors they did when they were young, that they could attain those outcomes.
- Former athletes and veterans exhibit a tendency to attempt to replicate workouts and training programs they did 'back then' without understanding that in many cases the programs were not designed for the outcomes the individual is now attempting to attain.

"If I workout and eat like I did back then, I could get that body back."

Vicarious Experience

- Perceptions attained not through personal involvement and interactions, but through the involvement and interactions of another individual with a situation.
- Second-hand experience.
- Individuals will use that vicarious experience to guide their own health behaviors.

"My friend was so fit back then, and they said that I should be doing these things if I want to look like that."

Past Perceptions

- There is substantial difference in the specific behaviors that are engaged in to **begin to acquire healthier attributes** and those behaviors that are engaged in to **sustain or refine those attributes**.
- Also ignores influence of genetic factors.
- Activities that are effective when an individual is 16 to 21 may no longer be effective after age 30.
 - Influence of circulating hormones.
 - Risk of injury.
 - Ignores peripheral activities.

The Effect of Experience

"I was a former college athlete, I already know how to workout."

- Individuals with high levels of experience exhibit the tendency to do less information searching when faced with a decision.
- Except in the instance where they encounter highly similar information that already confirms to their pre-existing beliefs.

Individuals with high levels of experience specifically stop searching for more information when they come across information that conflicts with their pre-existing beliefs and perspectives.

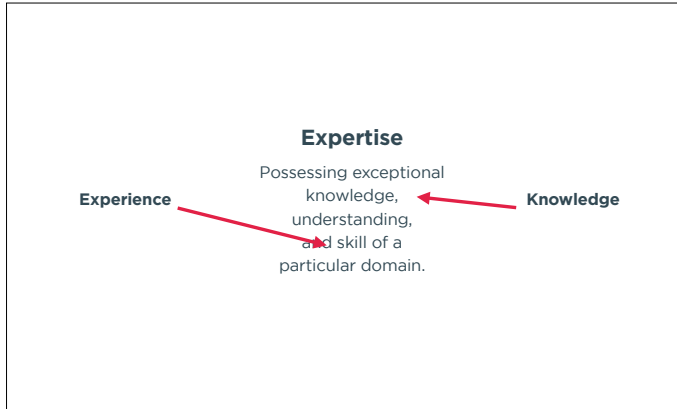
The Effect of Experience

Confirmation Bias

- The tendency to selectively value information that confirms and reinforces existing beliefs and perspectives.
- This is a cognitive bias that is beneficial so long as the individual's beliefs and perspectives are valid predictors for successful decision making.
 - It is highly efficient to not have to continue to search for more information and evaluate it.

An individual's experiences are important, relevant, and valuable.

Blindly trusting experience while simultaneously rejecting new information that might alter understanding of those experiences is dangerous.



How Do We Know
An Expert from a Non-expert

- There are vast differences in knowledge, understanding, and skill that exist between experts and non-experts.
- Literally the definition of being an expert...
- Experts exhibit an ability to comprehend a situation, consider the factors that matter, and make a decision that improves the situation.
- A non-expert is unlikely to fully understand the situation, nor are they likely aware of the specific factors that matter to that particular situation. To them the expert's decision may not make any sense.
- Experts exhibit a tendency to assume that most people have greater understanding of their domain of expertise than most people typically do.

<p style="text-align: center;">Non Experts</p> <p>Usually rely heavily on their experiences and assume their experiences reflect "the truth".</p> <p>Exhibit a tendency to be overconfident about their knowledge and make absolute statements.</p>	<p style="text-align: center;">Experts</p> <p>Exhibit a tendency to have low conviction regarding their own knowledge.</p> <p>Exhibit a tendency to assume that most people have greater understanding of their domain of expertise than most people typically do.</p>
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How Do We Know
An Expert from a Non-expert

Halo effect — A cognitive bias whereby inaccurate characteristics are assigned to a subject based upon other known characteristics.

Former Elite Athlete / Member of the Group

- Assumption that prior experience in that situation must automatically make the individual qualified.
- This could certainly be true, but should never be assumed.
- In some cases are used to justify '-isms' do to lack of qualifications.

How Do We Know
An Expert from a Non-expert

Halo effect — A cognitive bias whereby inaccurate characteristics are assigned to a subject based upon other known characteristics.

Attractive Individual

- Humans have a tendency to assign greater levels of expertise to individuals who are attractive.

How Do We Know
An Expert from a Non-expert

Halo effect — A cognitive bias whereby inaccurate characteristics are assigned to a subject based upon other known characteristics.

Can tell a good story

- Captivating individuals tend to be viewed as having greater expertise.
- There is financial benefit for being able to sell products to people based upon their inability to detect the lack of expertise.
- 'Snake-oil' salesperson

Career Challenge

Resistance to Information

**Confirmation
Bias**

**Dunning-Kruger
Effect**

Halo Effect

Clinicians & Practitioners need to be aware of these phenomenon so that they can better help their patients link their unproductive/unrealistic views with the underlying problem they are seeking help for.