

The Sport Psychology

By Nik Kotlarov

View on Improving Performance in Skydiving

About a year ago, as part of my psych degree, I started a project investigating the sport-psychology of skydiving. The way we perform under stress has always been a personal area of interest – theoretically and practically. For example, people tend to think that I'm a weirdo when I tell them that I enjoy crashing my motorbike. Without understanding why, I used to call the time between the 'point of no return' and the impact – a 'moment of purity'. Things just fell into the right places. It felt as if the body knew what to do without consulting the mind. Almost as if, being in danger gave me superpowers.

Yet, there are other times, when danger produces reactions that are simply counterproductive. Take the freezing response for example. Or, the way someone may crash into an object because it's the one that they were trying to avoid. It made me curious – what are the differences between the two states of mind? One that gives superpowers and the other that takes the powers away. Hopefully, armed with this knowledge, we should be able to create the 'superpowers' condition and avoid the other one.

Before we delve into the discussion about factors that influence our performance in skydiving, a word of caution - it can get boring! I am insulated from this boredom by a personal interest in the subject. The readers, who want to see the answers without taking the explorative journey, are welcome to skip to the part titled "What does it all mean?"

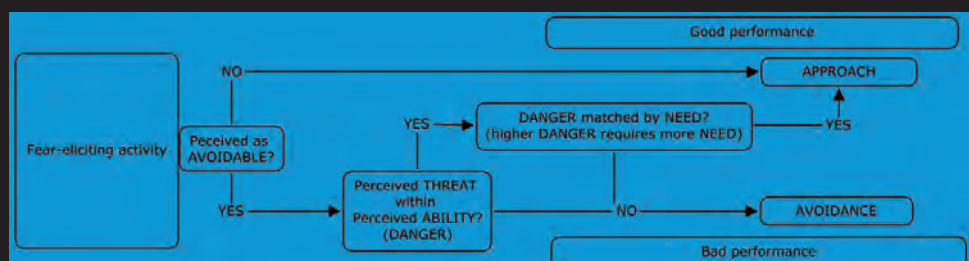
What is the problem?

So, why is performing under stress so unique? Why don't we simply decide on our each move during skydiving just like any other time? Well, we have a time-saving mechanism that allows us to bypass the usual decision process by 'reacting' to the cues from the environment. Hence, there is a certain degree of automatism in stressful situations. Our responses are 'triggered' rather than 'chosen'. This is the root of the problem – how do we predict and influence our performance in a situation where it is so unpredictable that it can sometimes surprise ourselves?

What do we know today?

Existing research from the animal and the human worlds teaches us that the response to danger depends on the amount of punishment and/or reward that we expect from the situation. The result is a corresponding bodily state that is best for the desired outcome. We call the two states "approach" and "avoidance". Let's take for example a dangerous task, where we believe we can escape the danger but still get the rewards. A series of physiological changes will mobilise our body for that particular task. We call this bodily state "approach". In an opposite example, state of "avoidance" is triggered when we believe that the threat is too overwhelming and/or the reward is too little. As a result, we will either freeze or actively engage in avoiding the task.

It makes sense if we think back to the evolution (my apologies if you don't believe in it). Our ancestors would have had a better chance of surviving (and mating, thank you very much), if their "approach-avoidance" mechanism enabled them to make lightning-fast decisions that were spot-on right. That is, when their need was great enough (high reward), they would be driven by the state of "approach" to engage in a dangerous-but-manageable (low punishment) hunt. The state of "avoidance" would prevent them from engaging in pursuits that are too dangerous (high punishment) and/or are not necessary (low reward). See if it makes better sense with the diagram. Don't worry if it doesn't.



Another important thing to remember here is the focus of attention. We have an amazing ability to follow our attention. I think everyone is familiar with the image of a driver wrapping his car around the only light-pole on the street. That is an example of the driver's attention guiding their behaviour.

What did I do in my project?

So, if the previous studies are right, skydivers should perform best when in the state of "approach". In my study, I estimated expected 'punishments' by measuring the emotion 'fear' and 'rewards' by measuring another emotion – 'interest'. I also measured 'self-confidence' to estimate the perceived chances of avoiding 'punishments' and gaining 'rewards'. To be able to relate these factors to skydiving performance, I asked the participants to report their levels of 'interest', 'fear' and 'self-confidence' twice – once for their best and once for their worst jumps. Comparing the two allowed me to see how these factors differed between the two extremes of performance – best and worst.

What did I find?

My results were very surprising. Across all experience levels, jumpers reported little 'fear'. Also, 'fear' was not very different during the 'worst' jump compared to the 'best'. One exception was the low-experience jumpers (5-160 jumps), who reported slightly lower 'fear' during their best jumps. 'Self-confidence', on the other hand, was much higher during the 'best' jumps across all experience levels. But the biggest difference was found in the 'interest'. All levels of experience reported much higher 'interest' during the 'best' jump.

What does it all mean?

I was trying to find ways to increase performance in situations like skydiving, where our reactions are 'triggered' rather than 'chosen'. One way to do this is by changing the factors related to such performance. In this case, I found that 'fear' is not one such factor, except for inexperienced jumpers. The factors that had the biggest impact on performance were 'interest' and 'self-confidence'. For the readers who joined us here, we associated 'punishments' in skydiving with 'fear' and 'rewards' with 'interest'. 'Self-confidence' was an additional factor relating to our belief in our own ability to obtain the 'rewards' and escape the 'punishments'. In this case, the participants responded much better to rewards (interest) than they did to punishments (fear). Their behaviour changed, when 'interest' and 'self-confidence' changed as well. Changes in 'fear', on the other hand, did not result in changes in behaviour.

How can we use this in skydiving?

In general terms, training can be made more effective by shifting our emphasis away from 'punishments' to 'rewards'. That is, rather than teaching what actions lead to accidents, it may actually be more useful to teach what actions lead to accident-free jumping. I know it sounds a bit vague, so let me explain. There are many behaviours in skydiving that we want to change. We practice to improve the way we perform during the jump, we learn the best ways to treat our gear, we are encouraged to pay attention to safety, etc. To change these behaviours, we need to know the factors that actually matter in influencing them. According to my research, these are related to the rewards that we derive from skydiving and our self-confidence. Let's look at some examples.

Landings

Many of our accidents happen on landings. So far, at every DZ I've been to I was greeted by the DZSO with a beautiful aerial shot outlining all the obstacles I might encounter on my way to landing. In other words, the skydiver is asked to learn the objects, which represent a possible danger (punishment) and as such should be avoided. This is an example of focusing on punishment in order to produce a change in a skydivers' behaviour – stopping them from flying into obstacles. According to my results, pointing out potential punishments is just not effective. A better way could be to point out areas where it is safe to land.

Besides, it is possible that by focusing jumpers' attention on obstacles, we're actually guiding them toward those. Remember the amazing ability we have to follow our attention? Ok, imagine under the canopy, thinking this as you're flying toward an obstacle: "Avoid THIS!" Here we are focusing on the obstacle and should probably brace ourselves for impact. Now imagine

the opposite – focusing on the area that is safe. As we are flying toward an obstacle, shifting our attention toward the safe area, we would be thinking: "Fly THERE!" Focus on the safe area, and that's where you'll end up.

Practically this can be addressed through simulation. At least the sporting teams and the professionals in the field can be encouraged to 'dirt-dive' under-canopy scenarios where they are presented with an obstacle and are expected to shift their gaze away from it, and toward clearer flight-path. As a result, skydivers can practice an invaluable skill of attention control. Also, they will learn to pre-identify clear 'escape' areas, as well as communicating mutual expectations about sharing the airspace and in-flight behaviour.

Safety

Many of our safety campaigns try to use potential 'punishments' in order to increase safe behaviours in the jumpers. For example, "low hook turns and high-speed landings do not always impress..." or the "Russian roulette" or "Do you have any holes in your safety net?" Here we are trying to change the unsafe behaviours into safer ones. Once again, we may be more effective if we try to appeal to 'reward' factors here, for example, a picture of a jumper that does look cool (let's admit it – looking cool is rewarding). A caption for that picture could read something like: "I'm confident in my gear because I checked it". Let's ignore the fact that it's a lame example for a second. There should be some work put in to the slogan itself, besides, marketing is not really my specialty. What I am saying here is that jumpers are more likely to respond to a poster that appeals to their sense of reward rather than punishment.

Self-confidence

Another adverse effect of using potential punishments and eliciting fear in the skydivers is the loss of self-confidence. Remember, the two factors that I found to correspond with good performance is high 'interest' and high 'self-confidence'. When we try to increase our safety through scaring the skydivers with potential dangers that they are facing, we may be actually lowering their self-confidence. Instead, we could actually find ways to improve skydiving performance through increasing self-confidence in the jumpers. For example, taking care to avoid setting goals that are too high.

Finally

Skydiving is one of those unique activities (yes, we are special) that put us in a position where we must make quite intricate choices with only a split-second to make them. It is far beyond the scope of this paper to really explore the ins and outs of this topic. The study I ran last year, gives some idea on the guiding principles that we can use in training and policy-making in skydiving. This principle is – rather than pushing jumpers away from unwanted behaviours, we may be better served by pulling them toward the desired ones. Rather than threatening them with what can happen if they do wrong, we can emphasise the rewards of doing right. For that, we need to be saying more "do-s" than "don't-s".

I am not saying that we should not inform the jumpers of the dangers of the sport. They must be made aware of those risks inherent to skydiving. What I am saying is that there are different ways of doing that and that some are more effective than others. I am saying that it is not effective to try to 'scare' the jumpers with the possibility of injury if they persist with negative behaviours. Rather, we could try to 'entice' them to engage in positive behaviours with the possibility of doing well. The result could be a confident jumper, focused on their goal and flying toward it.

ABOUT THE AUTHOR

Nik is an Australian skydiver, who recently finished his Honours degree in Psychology from Griffith University in Australia under the supervision of Dr B. Myers. Nik was born and raised in Russia and lived in Israel for 8 years. Today, his interests include clinical and sport psychology. The thesis in its entirety can be accessed online here: <http://nikot.50webs.com/index2-6.html> If you wish, you can contact Nik for further information via Email: www.nk.com@gmail.com

