

Part one of a two-part series

We look but we do not see

By Alexis Artwohl, Ph.D.

“We look but we do not see.” This Sherlock Holmes quote is used by Dr. Bill Lewinski (www.forcescience.org) in the training in which he presents his groundbreaking research on the dynamics of police shootings. Dr. Lewinski is one of the pioneers in bringing research about “inattention blindness” to the world of law enforcement. It refers to the fact that we often think we see everything we’re looking at — but this is far from true. Some people may believe we only have tunnel vision and auditory exclusion during high-stress events, but in reality we are experiencing these phenomena all the time, albeit to a greater or lesser degree.

Situational awareness, or not

Researchers Chun and Marois make the point that humans are stuck with a biologically limited capacity for the number of objects and locations that can be attended to. The bright side of this attribute is that we can engage in “selective attention” (well-documented by research) that allows us to focus on what is important and filter out less relevant stimuli. Without this highly adaptive ability, we would perceive the world as a confusing mass of overwhelming stimuli. The dark side of attention is that while we are focusing on some stimuli, we often become unaware of the other stimuli we are ignoring, even if they are right in front of us.

Research on “attentional” issues is highly relevant to police work. After all, it is your job to pay close attention to what is going on out in the streets of America. You do this to solve crimes, find bad guys and keep yourself and citizens safe in dangerous, dynamic and rapidly unfolding situations.

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What’s that buzzword? *Situational awareness*, the “bright side” of attention. Unfortunately, the flip side, situational unawareness (i.e., inattention blindness) can cause problems for all humans, including cops.

Different kinds of blindness, deafness, etc.

Research has shown that auditory exclusion is the most common perceptual phenomenon in police shootings, which are primarily visual events. We can also experience deficits within each individual sensory modality. For example, a person who is trying to find an unfamiliar street may be so focused on trying to read the street sign that he fails to see the stop sign right below it. Another example: you are in the grocery store and become so fixated looking for a particular object that you fail to recognize a close friend who walks right in front of you. Or maybe you were the one being ignored and you couldn’t figure out how your “inattentionally blind” friend could possibly miss seeing you standing right in front of her waving and saying hello.

Many experiments have documented this phenomenon. Experiments will typically give subjects a visual task to focus on, then present an unexpected but very

obvious visual stimulus right in the middle of the task. Surprisingly, many people are completely unaware of the new stimulus even though it is happening right in front of their eyes. Dr. Daniel Simon, a leading researcher of inattention blindness at the University of Illinois, has produced videos of experiments that dramatically demonstrate people’s limited ability to fully pay attention to multiple visual tasks at the same time (<http://www.viscog.com/index.html>).

There are other types of “we look but we do not see” phenomena that scientists have confirmed through research. One of these is “change blindness,” in which people fail to notice that something has changed, even when the transformation is happening right in front of their eyes. Another is “attentional blink,” which happens when our ability to pay attention is taxed to its limit. For instance, if individuals are presented with a visual stimulus, they will fail to “see” a second visual stimulus if it is presented too quickly. Therefore, if things are rapidly occurring in an actual situation, it’s unlikely that all the people will be able to see all the stimuli.

People can also have “inattentional deafness” (i.e., auditory exclusion), caused by competing auditory stimuli. If research subjects are given a task that requires them to listen to a message in one ear, they will often fail to “hear” tones piped into the other ear. (For more information about auditory exclusion, see *The Tactical Edge*, Fall 2007, p. 50.)

Likewise, all of you have likely had the experience of “inattentional numbness,” in which you received an injury during a scuffle, or while participating in a challenging sports moment, that you failed to notice at the time. Only when the excite-

ment was over and your attention was no longer riveted on the compelling task at hand, were you able to pay attention to and notice how your body was feeling (ouch!).

Several studies have documented the phenomenon of "tunnel vision," in which a person appears to lose peripheral vision and can only see and remember a small portion of what is right in front of him. In my research with 157 officers involved in shootings, 79 percent of the officers reported experiencing tunnel vision. Klinger's research found a 51 percent occurrence of tunnel vision, and Honig and Sultan found 42 percent

Tunnel "vision" should more accurately be called tunnel "attention" because research shows that it's mostly about what our brain's conscious attention is focused on. I think it is likely that the officers in all of these studies had a higher degree of tunnel vision than they realized and reported. Research shows that humans are consistently likely to overestimate their own performance. Siddle's research supported this finding, because officers not only overestimated their performance during shooting scenarios, but they also greatly underreported the amount of auditory exclusion they experienced. Only 24 percent thought they experienced any auditory exclusion but in fact, 98 percent did not hear the loudest sound in the room, the air horn.

The complex issue of visual perception and recognition is highlighted by the strange phenomenon of people who have been blind from birth but obtain normal vision later in adult life. Although the visual stimuli are now making it to the brain, the formerly blind brain is unable to make any sense of the information because it never had the opportunity to learn what it all meant. Therefore, the formerly blind individuals, in spite of now having technically normal vision, remain functionally blind.

Hence, "seeing" something depends in part what we are actually focusing our attention on as well as our ability to interpret what those stimuli mean. Having normal eyesight is necessary but not sufficient.

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Why are we so oblivious to so much?

Behavioral scientists have long been puzzled by inattentive blindness. Experiments have led researchers to the conclusion that some of the events happening right in front of us that are "unknown" to us may, in fact, have been registered in our brain at some level. These events, however, never make it into our awareness because the brain did not devote any conscious attention to it. Therefore, we not only do not "see" it (or hear or feel it), we won't ever consciously remember it. However, even though we are "unaware" of the event, it may, oddly enough, still influence our behavior. An example of this is from Siddle's research, where 98 percent of officers had no conscious awareness or memory of the loud air horn sounded during a shooting scenario, yet 40 percent of them physically responded to it in some manner.

Shomstein and Yantis measured the brain activity of research subjects who were required to switch from looking at something to listening to something. They found that the more the visual part of the brain is activated, the less active the auditory part is, and vice versa. For instance, if an officer is intensely visually focused on a threat, it turns out the brain will ignore or even suppress auditory stimuli because the brain is unable to pay full attention to all sensory modalities at all times. The more we're focused on one sensory modality, the more others will suffer.

At the very least, awareness of how and why our attention is focused may help us make the best choice. There have been some disturbing tragedies of police officers in patrol cars who are doing paperwork or some other voluntarily focused activity and they fail to notice the perpetrator who is approaching to ambush them. Is there anything they could have done to ensure their attention was "captured" by external stimuli that might predict danger? Should specific training be done on attentional focus in a way that could help officers better understand how this works?

Summary

This article has introduced the intriguing concept of inattentive blindness. It's a phenomenon that we experience virtually all the time, yet we are often blind to our own blindness. In Part Two we will further explore the implications of this perceptual phenomenon on police operations. ◀

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PART TWO OF A TWO-PART SERIES

In the Winter 2008 issue of *The Tactical Edge*, Part One of this article introduced the intriguing concept of inattention blindness. It's a phenomenon that we experience virtually all the time, yet we are often blind to our own blindness. In Part Two, we will further explore the implications of this perceptual phenomenon on police operations.

Distraction tactics

"Capturing" someone's attention is relevant for communicating with others, especially in a volatile situation where dramatic events may be grabbing people's attention. Unless you make an effort to capture someone's attention before communicating, you run the risk of being ignored simply because the person is not paying attention to you, even if you are right in front of him or her. Keep in mind that in high-stress situations, "inattention deafness" can also cause the person to not hear you, even if you're screaming at the top of your lungs. Likewise, if a suspect is intently focused on doing something you don't want him to do, like being aggressive, capturing his attention through "distraction" can be an effective technique to divert him from ill-intentioned behavior. Researchers at the University of Kentucky confirmed that distracting the attention of experimental subjects resulted in drunken subjects being less aggressive than sober subjects in the same provocative situation. Many officers have found these distraction techniques to work well with both drunken and sober suspects.

Distraction can also assist in taking uncooperative suspects into custody. While one officer is distracting the suspect, it can make it easier for other officers to sneak up on the suspect and quickly restrain him. A common example of distraction used in another context is magicians using it to make us look at one thing while they are manipulating something else, thus helping to create their seemingly baffling illusions. Distraction can also work great on pets, children and others. It's all about manipulating where people focus their attention and using it skillfully to achieve your goals.

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Multitasking: Not now, I'm busy!

We've all had the annoying feeling of "Not now, I'm busy!" when we're trying to focus our attention on something and someone else tries to capture our attention. There's a reason why your significant other may actually not hear you when they're selfishly absorbed in something other than you! Many of us think we can "multitask" (do several tasks at once), but research shows that this is usually not true. Although we might be able to fairly efficiently combine

highly-automated tasks such as walking and talking to a friend, tasks that require concentration and higher levels of cognitive processing are not easily combined. We are not really paying conscious attention to two things at once. We are actually "channel surfing": rapidly switching our attention from one task to the other. Our effectiveness at each task will suffer, as will our ability to remember what happened. Research also shows that multitasking is stressful, which is why we often feel irritated if someone interrupts us or we're trying to do too many things at once. If your colleagues are dealing with a dangerous situation, to what extent do you want to distract them by capturing their attention with comments or questions? There is obviously no correct answer to this, because it all depends on the situation and how much practice the individual has had with each task. However, it's a good idea to be mindful of the influence of interrupted attention on your partners and others around you. The bottom line: avoid multitasking when possible, and think about the possible consequences of interrupting someone when they're engaged in a task.

What's the meaning of that?

Not surprisingly, researchers have found that stimuli that are meaningful to an individual are the most likely to be noticed. What is meaningful? That will obviously vary greatly depending on the individual and the situation. In looking at the difference between amateurs and experts on any given task, research shows that experts excel in part because they are much better able to immediately grasp and pay attention to

meaningful stimuli and filter out those that are not relevant to the task at hand. This finely tuned ability to focus on the most relevant stimuli comes from effortful practice and experience over time, and it may or may not be done in a conscious manner. People are also more likely to notice things that they expect to see but miss things that are unexpected. Veteran cops will therefore have a smaller range of phenomena that are unexpected simply because they have "seen it before." This will help them rapidly notice relevant stimuli, then anticipate and deal with situations that leave rookies clueless and flatfooted. The combination of knowing what is meaningful honed with effortful practice is why it is important for veterans to explain what they notice to rookies, and why rookies should be asking lots of questions about what it all means.

Looking around

Another related area of research relevant to attentional issues in police operations is

To sum it up, officers are often forced to deal with rapidly changing, dynamic situations which are likely to occur in low light conditions. Obviously anything that trainers, coaches and supervisors can do to give the officers a wide range of experiences with emphasis on paying attention to what is the most meaningful and important part of a situation will help the officers make rapid and correct decisions in the future.

that of visual "scan patterns." All throughout the day, our eyes are scanning the environment. As we have already learned, the brain can't pay attention to everything all the time, so the scan patterns that our eyes make as we look around are influenced in part by what we judge, consciously and unconsciously, to be meaningful.

It turns out that the visual scan patterns of experts and amateurs are different. This has been documented with elite vs. sub-elite athletes, and veteran vs. less experienced fighter pilots. What about expert vs. rookie cops? How are their visual scan patterns dif-

ferent? What implication does that have for officer performance? Are the scan patterns of expert cops something that can be identified and taught so the rookies can learn it faster? The Force Science Research Center is leading the way with proposed research to look at these important questions.

How did you see all that? Can I learn how to do that?

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Research done by the Force Science Research Center in conjunction with the London Metropolitan Police Federation has confirmed the value of training and experience. Not all officers with the London Met are allowed to engage in what we might refer to here in the USA as "police driving." No officer is allowed to exceed the speed limit or drive "lights and sirens" unless they have had two weeks of full-time driver training and passed a test that qualifies them to be "response drivers." Even so, they are still not allowed to do any pursuit driving until they have had an additional four weeks of full-time driver training, for a total of six weeks, and passed a test that qualifies them to be "pursuit drivers." During training they not only drive, but they must be constantly talking out loud and explaining everything they are notic-

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ing, deciding and doing. This forces them to consciously pay attention to and report meaningful data that will influence their driving behavior.

During the FSRC research, these highly trained drivers were compared on driving tasks with untrained drivers. The trained drivers demonstrated a greatly enhanced ability to notice multiple stimuli in the environment and remember them afterward. This ability was task-specific and they were not superior to the untrained drivers on memory tasks not related to driving.

During a training trip to London with the Force Science Research Center I was privileged to do a ride-along with one of their driving instructors while he drove me through the crowded and narrow streets of London during a simulated "response call" and also a simulated "pursuit" of another car driven by another instructor. During the pursuit he was constantly engaged in rapid-fire talking about everything he was noticing, deciding and doing. I was amazed at the huge amount of detail he was taking in and processing while driving at high speeds. He was noticing a lot more detail than I was and I didn't have the added burden of trying to drive at the same time. On a side note, I was also impressed with his absolutely smooth control over the vehicle. I'm prone to motion sickness, so in preparation I took some anti-nausea medication and warned him ahead of time. He smiled and said, "Don't worry, Alexis. While I'm driving you could be drinking a cappuccino and not spill a drop." And he was right. I was truly impressed, and his performance was a tribute to their superb training.

Attentional issues are also relevant for investigations because they will clearly influence what witnesses, including officers, are able to consciously remember about an event. The topic of memory will be explored in future articles. ◀

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