

EXTRA SESSION

Role of Stimulus Control in OBM

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ABSTRACT

Two key goals in managing behavior are producing a change in behavior and maintaining behavior change. The science of behavior applies scientific principles to accomplish these goals. The key element in changing behavior is to collect reliable data on the target behavior. Once behavior is measured these data can be used to set goals, provide feedback, and establish reinforcing contingencies to maintain behavior. However the starting point of any behavior change program is to get the behavior to occur in the first place. The most direct way to accomplish this objective is providing timely prompts or reminders just before the behavior should occur. These prompts set the person up for success and make it easier to kick-start the behavior change process. New technology such as tablets and smart phones can be programmed to arrange prompts including video models in a timely manner. Feedback and natural contingencies can easily be built into a tablet or smart phone application to sustain the behavior change. The program needs to remain data based to ensure it is part of a continuous improvement process.

Keywords: Organizational Behavior Management, Prompting Behavior, Stimulus Control, Smart Phones and Tablets as Part of Behavior Management System

INTRODUCTION

Effort and time can have very subtle effects. For example, people are more likely to yield to a pedestrian when they are already slowing down (less effort) such as when entering a roundabout, then when accelerating, such as when exiting a roundabout. This is because it is somewhat more effortful to slow down when you are accelerating then when you are already slowing down. Why do many people fasten their seatbelt after they have started to drive? They save a second or two getting on the trip when they buckle their seatbelt after motion.

The effect of modelling is also very clear. We tend to follow the leader. Pedestrians will cross against the signal because someone else leads. People will speed because other drivers are speeding, and will drink and drive if many others are doing it. Forgetting is also a common problem. Control by the environment is typically established by a behavior being consistently reinforced in the presence of a particular

stimulus. The key to remembering is strong stimulus control. However, even when good stimulus control is established, people are likely to forget when they are distracted because distraction disrupts behavior that is connected together in a chain. Some refer to a high workload also disrupting stimulus control, but in this case the high workload is related to a distraction related to the poor stimulus control associated with high workload tasks or multitasking. Texting while driving is an example well established stimulus control related to responding to incoming texts distracting the driver from the stimulus control of observing traffic and the road. Other variables that can attenuate stimulus control are impairment caused by drugs or lack of sleep. Early on forgetting was seen as a problem in aviation. This is one reason why checklists were developed. However, this approach fails when someone forgets to use the checklist because they are distracted.

Often people confuse lack of intent with forgetting. Lets look at an example from everyday life. Lets say your wife convinces you that you frequently do something that is wrong and you agree and want to change that behavior. Maybe you agreed there was a problem because you wanted to shut her up (escape) but lets assume you meant it. Regardless, what are you most likely to do in the same situation the next time? What you have done in the past! You are unlikely to be remembering the discussion that you had several days prior that convinced you that you needed to change. It is an issue of stimulus control. The solution to this problem is to provide more timely reminders that occur at the start of the situation that has control over the behavior you wish to change.

Most OBM programs have focused on the use of feedback systems, sometimes backed up with reinforcement. However, this strategy does not account for the issues of shortcuts and forgetting very well and often leads to the need to provide frequent correction. Prompting is one strategy for establishing a behavior under stimulus control so it can be reinforced and maintained. This approach sets the person up for success rather than correction. Research has shown there are numerous factors that influence the efficacy of prompts.

PROMPTS SHOULD BE IMMEDIATE

The first factor is the immediacy of the prompt. Ideally, prompts should occur just before the behavior that is required. There are three ways to arrange for prompts to be delivered just before you want the behavior to occur. One way involves using technology such as a smart tablet, smart phone or computer program. Video modelling can be added to provide a high level of precision in prompting the behavior. This type of strategy could have been used at access to decontamination stations during the Ebola outbreak. Nurses who did not receive much in the way of recurrent decontamination training likely forgot the details of the decontamination procedure. A well crafted video model prompting system at the decontamination station, provided in sections with voice control, could have been very effective in producing high levels of compliance to the safe behavior protocol.

Because many workers use tablets, it is possible to ensure high levels of compliance in

real time. These devices can deliver prompts at times when a new task is initiated. We are implementing this procedure with maintenance staff who respond to a variety of problems related to the electrical problems, and the steam system at the university. This system can also provide video models for tasks that are infrequently performed when they arrive on site. This is a much better strategy than yearly or bi-yearly recurrent training. This system can also be data based because it knows the operator and whether they are current on the procedure they are assigned to do. One of my students also evaluated an audible checklist which initiated itself when it detected changes in aircraft behavior that suggested the aircraft had entered a climb, descent or cruise condition. The system could also detect the aircraft was approaching an airport to land. When these changes occurred it initiated an audible voice controlled checklist. Audible emergency checklists could also begin when a problem is detected or by voice command.

Computer programs can also be set up to prompt the user. For example, when an order is placed at a call center the computer could prompt the person taking the order to ask if they needed items that were typically required when that particular item is purchased. This is not the same as mindlessly asking "Do you want fries with that order?" because it would not only increase sales but would increase the likelihood the person not forgetting to order another item they might need and which, would prevent the frustration of having to reorder and wait for the additional items arrive. In this case increased sales would be complementary to improved service.

Another way to ensure that prompts are delivered at the appropriate time is to arrange the location of the prompt to coincide with the need for the behavior. One example involves the placement of reminders at crosswalks to look in the right direction for cars. American tourists in London often look left when crossing the street because vehicles drive on the right side of the road in the United States. In many countries in Europe motorists drive on the wrong side of the road, I mean the left side of the road. In London reminders to look right could be placed at crosswalks. The best place to locate them is on the roadway because people often look down when stepping off the curb. This would represent perfect timing. In New York the signs prompting tourists to look left would serve the same function. Another example would be to place pictures of different items in bins where they should be kept. A similar approach could be used to obtain better accuracy in recycling waste. In fact, the shape of the openings on top of the recycle container can suggest what you use it for. For example a circular cut would suggest bottles or cans. A wide rectangular slot would suggest paper. Data indicate this approach improves the accuracy of recycling. A feedback sign to encourage employees to wear seatbelts can be placed at the exit of the parking lot. A sign to prompt people to open the door on the right of a double door and not the left should be placed on the handle of the left side door. Prompts on how to hold a tool can be painted on the tool or could be designed into the tool's grip.

Other way to improve the timing of a prompt is to schedule them to occur at the correct

time. A manager who wishes to ensure that executives that have been taught an improved report format can call them after assigning them to prepare a new report reminding them to use the new report format and how important it is they follow it. This sets them up for success rather than an opportunity for correction.

FIXED TIME PROMPTS

Sometimes it is desirable to have people engage in specific behavior on a fixed schedule. Years ago I taught elementary school teachers to observe the class more frequently so they could provide brief encouragement to students that were doing their work and redirect students who were going off task before their behavior escalated into a problem. When teachers engage in this type of observing behavior student say they have eyes in the back of their head. We played chimes over the public address system on a random interval to provide the reminders. Teachers were instructed to listen and discreetly look around the class. When they saw someone doing the work they were instructed to deliver verbal and non-verbal praise. When they saw a student them losing focus they were instructed to redirect the students. This strategy was highly effective. Fixed prompts can also be delivered to prompt employees to perform safety checks at regular or random intervals.

PROMPTS SHOULD BE SPECIFIC

When prompts are not specific we force people to guess what we want them to do. This is a very inefficient strategy because an ambiguous prompt does not set a person up for success. An example would be using sign that says “SLOW TRAFFIC KEEP RIGHT” on a stretch of road with a passing lane, vs. one that says “KEEP RIGHT EXCEPT TO PASS”. The problem with the first sign is that “SLOW” is a relative term while it is easy to determine whether or not you are passing someone.

Specific prompts can show the behavior while emphasizing the relevant components. Slow motion video presentation can also show important nuanced aspects of a behavior. This is important because it is frequently the case that small differences in topography or timing can make the difference between success and failure.

PROMPTS SHOULD REMIND PEOPLE OF CONSEQUENCES

Reminding people of consequences is an establishing operation that enhances the prompts efficacy. Prompts can mention the positive effects of engaging in the prompted behavior and the negative aspects of either not engaging in the behavior or engaging in an undesirable behavior. It is important to remember that reminding them of consequences they agree are important and focus on concern for the person involved typically produce the best results.

REINFORCE RESPONDING TO THE PROMPT

Give feedback, praise and other reinforcers when someone responds to the prompt.

Remember, the purpose of a prompt is to get behavior to occur so reinforcement can follow the behavior. Praise, feedback, preferred activities, bonus or commission are all examples of possible reinforcers. Always remember that the prompt is an excellent way to set someone up for success. Once they do it right, it is important that you have reinforcing consequences in place to maintain the behavior.

PROMPTS SHOULD BE PART OF A SYSTEM THAT INCLUDES DATA ENTRY, FEEDBACK AND OTHER CONSEQUENCES

The best way to incorporate prompts, as part of a total behavioral system is to program the system into a smart tablet, smart phone or computer. This type of program allows you to have a complete system that can be self-sustaining. It is also possible to link devices to give community feedback to employees. Head sprout is a behavioral computer based system that is being used to teach children to read in the United States. Many school systems are using this system in their classrooms. Behaviorally based computer based systems could also be effectively used in business and industry to teach and maintain key behaviors.

The second type of prompt is a written instruction or reminder. Post it notes, written checklists, a day planner, written instructions and directions fall into this category. The location of this type of prompt is key in determining whether it will be observed. An audible reminder can be used to remind someone to look at a written prompt. For example, an audible prompt such as a chime could be used to prompt someone to start a checklist or to score his or her own behavior or the behavior of a peer. Posters and table talkers are examples of this type of prompt. Posters and signs are typically ineffective because they are not usually seen just before you want the person to engage in a behavior. Again location can be very important. For example a sign to prompt pedestrians to signal drivers their intention to cross the street should be placed where the pedestrian will be looking before crossing. The best place would be across the street or in the street just off the curb because people typically look down before leaving the curb.

Modeling prompts are the third type of prompt. These can easily be provided on a smart tablet or phone. Videos show clearly how to correctly perform a behavior and can be used to prompt social as well as work behaviors. Recurrent training is often proposed as the solution when people rarely need to perform a task that is potentially dangerous or critical for success. An easy alternative is to provide a video model that the person is required to watch before performing the task. Imitative or modeling prompts can also be used to teach people to errorlessly follow an algorithm. The prompt can then be systematically faded.

It is sometimes effective to exaggerate the subtle differences in a video modeled prompt to make it easier to discriminate the critical element to be learned. For example, a model showing how you unweight yourself when initiating a turn in skiing can be exaggerated slightly by the instructor preparing the imitative prompt.

Material prompts are placed right on the materials themselves. For example two levers are located in a similar position to operate the flaps and the spoilers in one popular glider. The spoiler lever was red and the flap lever was blue but people had problems using the wrong lever when landing which led to crashes. The reason that different colors did not work was that pilots often grabbed the levers by feel because they were paying attention outside the airplane when landing. Placing a tennis ball over the flap lever changed the feel of the two levers and totally eliminated the problem. The grips on tools can be similarly designed so it is awkward to hold them inappropriately.

HOW TO DROP A PROMPT: TRY ABRUPTLY DROPPING THE PROMPT

Sometimes it is possible to abruptly drop a prompt after a person has developed a habit of correctly engaging in the correct behavior. One way to determine whether is right to drop the prompt is to try dropping it and seeing whether the behavior continues to persist. If performance is maintained the prompt may no longer be needed.

Another strategy is to gradually remove the prompt in a systematic way. Try making the prompt less intense (literally fading it if it is a visual prompt). For example, a picture prompt can be made more faint over time. Try gradually removing parts of the prompt (fading). The prompt can also be made gradually shorter until it is reduced to a single word before you attempt to totally drop it.

Lastly you can try using a time delay by giving the prompt longer and longer before it is needed. In clinical applications of behavior analysis this type of prompt is used to replace an inappropriate behavior with an appropriate behavior. For example, in order to teaching a child to replace tantrums with problem solving behavior.

CONCLUSIONS

Using prompts seems deceptively easy. However, timing, location and many other variables enter into whether a prompt will reliably produce the desired outcome. Crafting a prompt so it evokes the desired behavior is a key element of any successful behavioral program. Once the behavior occurs systems need to be in place to provide individual and sometimes group feedback, as well as sources of reinforcement to maintain the behavior. These elements are also required to establish strong stimulus control over the desired behaviors. The use of computers, the Internet, smart tablets and phones can play an important role in maintaining appropriate behavior. However utilizing these technologies requires close cooperation between behavior specialist and professionals who write the software necessary to program applications.

REFERENCES

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Ron Van Houten received his BA from SUNY at Stony Brook and his MA and Ph.D. from Dalhousie University where he received training in the Experimental Analysis of Behavior. He is currently professor of psychology at Western Michigan University. Dr. Van Houten has published extensively in JABA on a wide variety of problems, ranging from the education of inner city youth and children with “learning disabilities”, the treatment of children and adults with developmental delays, the treatment of clinical problems in children, traffic safety, energy conservation, and aviation safety. Currently Dr. Van Houten is a member of the Transportation Research Board and a member of the National Committee for Uniform Traffic Control Devices. He is a Fellow of the Association for Behavior Analysis International (ABAI). Dr. Van Houten recently received the Patricia Waller Award from the Transportation Research Board, and the award for Scientific Translation Promoting the Impact of Science on Application from the Society for the Advancement of Behavior Analysis for his work in the area of traffic safety. He is also an avid pilot flying power aircraft and gliders and a flight instructor.

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