



For Teachers of Introductory Psychology
 APA EDUCATION DIRECTORATE

November/December 2001 • Volume 11 • Issue 5

PTN

PSYCHOLOGY TEACHER NETWORK

Coping With the September 11th Terrorist Attacks Against the U.S.

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 Ph.D.

The terrorist attacks of September 11, 2001 are unprecedented in their scope and traumatic impact. Even if we did not know anyone who died that day, we have all been touched—at least indirectly—by their deaths. Because our country has not experienced events of this

magnitude before, we are left with little information concerning how individuals of all ages will cope with these atrocities. However, while traumatic events are very different from each other, and while each may lead to very unique demands and each may create specific needs, research on how individuals cope with stressful life events in general can likely be applied to responses to this national disaster.

The psychological consequences of disasters like September 11's attacks do not come merely from the loss of life and physical damage and destruction associated with the event. Psychological consequences of such traumas are also due to the disruption of life, to the alterations in routine patterns of daily living, and to the alterations in one's views of the world as a result of the disaster. Thus, the attacks of 9/11

did far more than destroy buildings. It has interrupted the rhythm, cycles, and entire social fabric of our country. So, while the physical impact of this disaster may have been over in a few minutes, the psychological consequences will likely extend over months, years, and for many of us, perhaps for the rest of our lives.

In addition—and importantly—the full consequences of this trauma are just beginning to unfold. While the numbers of “missing” are now being referred to as the number of “missing and presumed dead”, there still is a great deal of uncertainty in our country regarding our economy, our next steps militarily, and the risks of bioterrorism and possible subsequent terrorist attacks. At this point, people of all ages want answers to the unanswerable. We want control over the uncontrollable. We want a reduction in the ambiguity we feel about our future. Unfortunately, none of these are likely to happen any time soon.

Many of us have probably felt a number of emotions over the course of the past several weeks and months. Some may have felt shock or emotional numbness when we first learned of the attacks. Others may have felt a sense that this all cannot be “real”. Some people may have responded with a calm and collected manner, and may have been quite capable of “doing what

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Kenneth M. Steele, Ph.D.

The “Mozart Effect”: An Example of the Scientific Method in Operation

Kenneth M. Steele, Ph.D., Appalachian State University

Students have difficulty understanding and appreciating the value of the scientific method in dealing with issues in psychology. Typically, students see conclusions from a study or two about a complex question. The problem is that the student must accept or reject these conclusions because they come from a particular source, whether teacher or textbook. This is reasoning by the method of authority, which was not the method used to obtain the original results and is not how research psychologists think about such results.

Some outcomes may be so universal that we can treat them as “facts.” Other findings are equivocal or enigmatic. The scientific method is a process of empirical evaluation of all findings. Research on the Mozart effect exemplifies this process for two reasons. First, the effect is relatively simple to understand. Students do not have to learn much about equipment or deep issues of research design. Second, a sequence of experiments appeared in rapid enough order that students can appreciate the process.

The Original Finding

The original article appeared in *Nature* (Rauscher, Shaw, & Ky, 1993). It reported that 36 college students showed an increase on spatial reasoning scores from subtests of the Stanford-Binet Scale of Intelligence after listening to a Mozart piano sonata relative to listening to a relaxation tape or silence. The effect occurred only if the subjects were tested immediately. The size of the effect was the equivalent of 8 to 9 IQ points.

The music selection was from the Sonata for Two Pianos in D Major (K. 448). It is lively and emphasizes the virtuosity of the performers. It is not a central piece in the Mozart canon.

The spatial reasoning measures consisted of a pattern analysis task, a multiple-choice matrices task, and a multiple-choice paper-folding and cutting task. Figure 1 shows an example matrices item. The task is to choose the geometric figure from the lower line which should be inserted in the empty cell to complete the pattern. Figure 2 shows an example paper-folding and cutting item. The top row shows a piece of paper undergoing a fold and a pair of cuts, proceeding from left to right. The task is to pick the illustration in the bottom row that represents the paper when it is unfolded.

Rauscher, Shaw, & Ky (1995) reported a replication of their discovery using only the paper-folding and cutting test.

Why did the effect become famous?

The authors contended that this was the first experiment to demonstrate that listening to music caused an increase in spatial reasoning. The issue of cause is important. Many people believe there is a positive correlation between academic success (like high school grade point average) and musical experience (like participation in a band) although the research literature is ambiguous.

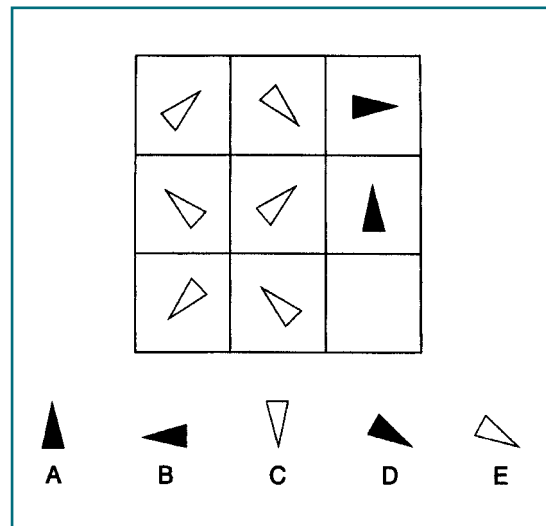


Figure 1. Practice Stanford-Binet Matrices Item. The correct answer is 'B' for the item illustrated here.

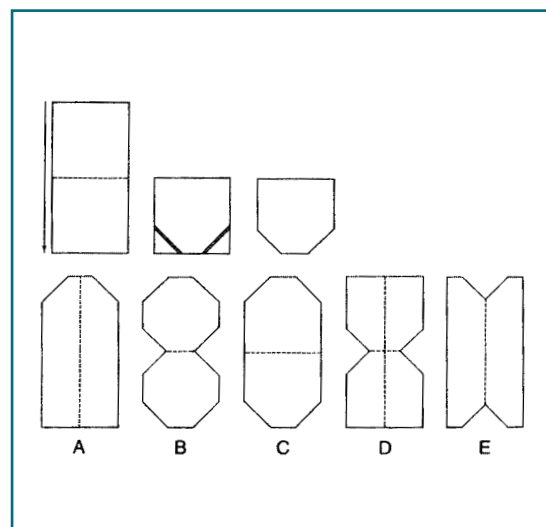


Figure 2. Practice Stanford-Binet Paper Folding and Cutting Item. The correct answer is 'C' for the item illustrated here.

People often assume that a correlation suggests a causal connection. However no firm conclusion can be drawn as to why this relationship exists. For example, students from wealthy homes may have the added time and opportunity to succeed more than average in both mathematics and music.

The authors' causal interpretation was that exposing a person to that specific sonata was the sole factor that explained the increased reasoning scores. There was no explanation in the original article of why the Mozart effect should have occurred. In later publications, Rauscher and Shaw suggested that this particular sonata was activating brain regions required by the spatial reasoning tasks, and that this overlap of activation could be related to a mathematical model of neural activity by Shaw, a physicist by training.

Later, their interpretation was transformed into the global generalization that participation in music activities would produce increases in mathematical performance and that the existence of the Mozart effect demonstrated the academic necessity of music education in the school curriculum.

Mass marketers sold books and CDs to worried parents with the promise that early exposure to the right music would speed intellectual development. Rauscher and Shaw contributed to the frenzy by adding that listening to this sonata could reverse the effects of senile dementia, epileptic seizures, and improve the maze-learning ability of rats.

How to approach research results

A startling claim is made and repeated widely in the press. How is the claim evaluated? First, one must differentiate between the results of the experiment and the interpretation that was applied to the results. The results were that students showed increased scores on specific problems after hearing a portion of piano sonata relative to their scores after listening to a relaxation tape or sitting in silence. The interpretation was that some property of the music, perhaps a certain pattern of notes, increased the activity of brain regions involved in spatial problems and that this increased brain activity produced increased accuracy of solution of visual puzzles.

One can see a large gap between the results and the interpretation. A purpose of the scientific method is to determine whether the gap can be filled successfully by a series of experiments which successively extend the original finding. To do this researchers needed a description of the critical properties of the music, the means by which the music produced its effect, the range of activities that would be affected, and the expected duration of the effect. But the first step is that you need to be able to produce the effect.

Early attempts to produce a Mozart effect

Several experiments appeared after the initial study and reported negative results. Carstens and colleagues (1995) had students listen to the original Mozart sonata and then answer 64 multiple choice items from the Minnesota Paper Form Board Test. Participants viewed two-dimensional parts and selected the figure that indicated the appearance of the final unit when the parts were assembled.

Carstens and colleagues found no difference in performance between the Mozart group and a control group who meditated in silence. No difference, or a null result, is tricky to interpret. The lack of difference could be due to the lack of effect of listening to the sonata or due to other conditions which interfered with the subjects. Carstens and colleagues found that the subjects' SAT scores predicted Form Board scores but the addition of information of whether the subject listened to Mozart changed the size of the prediction score by a trivial amount. The important point is that the lack of a Mozart effect became meaningful in the context of the other expected finding.

A second study worthy of note was by Newman and colleagues (1995). They increased the number of participants so that detecting the effect would be more likely, and they obtained background information on the musical training and preferences of their subjects. Subjects listened to the Mozart sonata, a relaxation tape, or sat in silence and were tested on items from Ravens Progressive Matrices. The task is very similar to that illustrated in Figure 1.

Newman, like Carstens, found no Mozart effect. Additionally, the effect of musical background was not consistent with what would be expected from Mozart-effect advocates. Subjects who had extensive music training ($M = 8$ years) performed no differently than subjects who had no musical training. Moreover, subjects who indicated a preference for classical music scored significantly worse on the matrices problems compared to those who preferred "other" music.

The Reply of Rauscher and Shaw (1998)

The purpose of Rauscher and Shaw's reply was to explain the difficulties that other researchers were having in producing the Mozart effect. Their major point was that previous experiments did not test the right type of spatial reasoning.

The original 1993 article had reported improvement on the combined measure of the three Stanford-Binet tests because scores on the tasks were well correlated. Rauscher and Shaw (1998) explained that the improvement reported in the 1993 article had occurred only with the paper-folding and cutting task, so the lack of effect observed by Carstens et al.

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Dear Editor:

A Psychology Exercise to Evaluate the Mozart Effect

Erika W. Pohl & Katherine Kipp, Ph.D., University of Georgia

In this exercise, students (a) read about the “Mozart effect” in scientific articles, (b) learn about former Georgia Governor Zell Miller’s act to distribute free CDs of classical music to all babies born in Georgia, (c) discuss these issues in small groups, and (d) compose editorial letters about the topic that would be suitable for newspapers.

Concept

Students in our developmental psychology classes are usually not future psychologists. They are future parents, teachers, professionals and community leaders. They are also consumers of popular press and media presentations on psychological issues. To meet their needs and prepare them to be wise consumers, we can train them to make critical evaluations of the presentations they will encounter. We can also train them to be active citizens, contributing to society through their educated reflection on scientific and psychological issues. The class exercise we describe here is one attempt to provide this type of training.

Procedure

Before class, students read the 1-page scientific article describing the original research that became popularly known as “the Mozart effect.” Rauscher, Shaw, and Ky (1993) reported that adults who listened to 10 minutes of Mozart’s music performed better on several spatial tasks from the Stanford-Binet Intelligence Test than did adults who listened to relaxation tapes or adults who listened to nothing for 10 minutes prior to testing. This study, and others to follow, fascinated the public with the idea that listening to classical music might increase IQ.

Begin the class with a short lecture reviewing the findings of the Rauscher et al. article. Then discuss information about public interest in the research and the public policy generated by this interest (e.g., efforts in Georgia, Tennessee, and South Dakota to provide classical music to babies; merchandise targeted at parents interested in increasing their children’s intelligence).

Next, divide the class into small groups of 4 or 5 students. Give each group a packet of short readings (listed in the materials section below). One reading is a scientific article reporting follow-up research. Others are popular press articles touting the benefits of classical music on cognition. There are also popular press articles describing how the “Mozart effect” has influenced public policy decisions. Within groups, each student reviews and presents a different short article to the group.

Students discuss the articles and their ideas within their small groups. They should be encouraged to consider a variety of issues, including the importance of replication in science, the translation of research findings into public policy, and the emotional



Erika W. Pohl (left) and Katherine Kipp, Ph.D.

issues involved in parents’ desire to create the “ideal” enriched environment for their children.

Individually, students then compose editorial letters suitable for the local newspaper about the issues from their readings and discussion. Students’ letters should either support or oppose public policy decisions based on the “Mozart effect.” Their arguments should be supported with reference to empirical findings.

Finally, the entire class discusses the issues and individual students are invited to share excerpts from their letters.

Materials

Original article for students to read before class: Rauscher, F. H., Shaw, G. L., & Ky, K. N. (1993). Music and spatial task performance. *Nature*, 365, 611.

Scientific article for group discussion: Steele, K. M., Bass, K. E., & Crook, M. D. (1999). The mystery of the Mozart effect: Failure to replicate. *Psychological Science*, 10, 366 - 369.

Public press articles for group discussion: Corwin, T. (1998). Newborns to arrive with music. *Augusta Chronicle*, 6/24/98. Available online at < <http://www.augustachronicle.com> >

Fordahl, M. (1999). *Mozart music may not make you smarter*. Associated Press, 8/26/99. Available online at < <http://www.augusta-chronicle.com> >

Kolata, G. (1999). “Muddling fact and fiction and policy”. *New York Times*, August 8.

Viele, L. (1998). Miller unveils disc of music for babies. *Augusta Chronicle*, 6/25/98. Available online at <http://www.augusta-chronicle.com>

Resource for the instructor: “The Skeptic’s Dictionary” presents a good critical evaluation of the research and media attention on this issue as is available online at < <http://skeptic.com/mozart.html> > The instructor can use this for background material.

Evaluation

We’ve found that this exercise is an effective means of accomplishing our teaching goals. Students are enthusiastic about experiencing the relevance of the course work to real-world issues. The media attention, coupled with the failure to replicate the original research, makes this an ideal issue for helping students to evaluate empirical research. Students also see how scientists and lay-people alike eagerly embrace a provocative finding. Writing the editorial letters helps students practice communicating their knowledge and speaking out about science and public policy.

Mozart, from page 3

and by Newman et al. with their matrices tasks was not a contradiction.

Second, Rauscher and Shaw suggested that other differences among experiments might interfere with showing the effect. However, they were vague in connecting this suggestion to specific procedures in studies. Finally, they stressed the importance of choice of musical composition. But, five years after the original report, they could be no more specific than “complexly structured music, regardless of style or period.”

The Replications by Steele and Colleagues

I had read the Carstens et al. and the Newman et al. experiments in the course of preparing one of my own manuscripts. Their procedures were reasonably similar to Rauscher and Shaw’s. Yet there was such a striking difference in outcome. The size of the statistical difference was large in both Rauscher et al. experiments, but was quite miniscule in the Carstens et al. and the Newman et al. experiments. Rauscher and Shaw blamed the problem on the use of the wrong dependent measure.

Perhaps, there was some other aspect of the procedure that explained the difference in results. In this case, the best solution was to replicate the procedure of one of the Rauscher et al. experiments. Like a cook, I would follow her recipe. Having obtained her result then I could vary the recipe to discover what ingredient was causing her bread to rise while everybody else’s fell flat.

The Rauscher et al. (1993) report in *Nature* was very short, and lacked many procedural details. However the 1995 report appeared as a standard length article with the necessary procedural details and had the added bonus of being consistent with the advice of Rauscher and Shaw (1998). The experiment by Steele, Bass, and Crook (1999) replicated the essential details of the 1995 procedure. (*Readers may obtain a copy of this article at < <http://www.psych.appstate.edu/Faculty/Steele.htm>>*)

Steele, Bass, and Crook (1999) used the same Mozart sonata, the same control condition stimuli, the same paper-folding and cutting task, and the same experimental design. Participants completed a pretest on 16 items. Two days later, subjects were exposed to a treatment condition and then immediately tested on 16 new items. We increased the number of subjects over the Rauscher et al. study to increase the experiment’s sensitivity to the effect.

In addition, we used standard variations of design. I was confident that the Mozart effect would be replicated at last, and then the real analysis of discovering the reasons for the contradictory findings would begin. I was shocked with the final results. There was no hint of a Mozart effect. Figure 3 shows the aver-

age number of items correct for the three groups when tested immediately after the listening condition.

Using Rauscher’s own recipe, our bread was as flat at that reported by Carstens, Newman, and others. A complete list of the studies can be found in a summary article by Christopher Chabris.

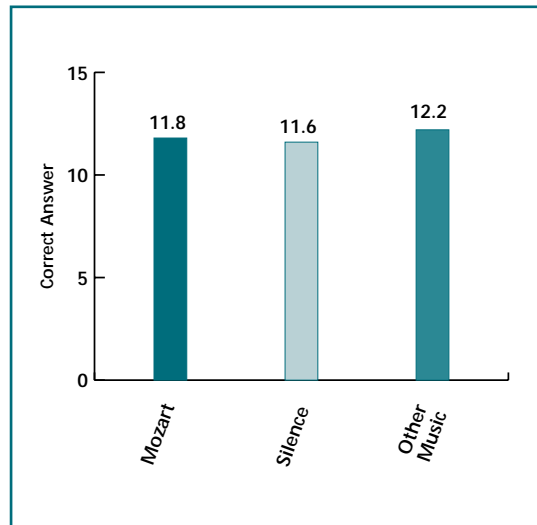


Figure 3. Steele, Bass, & Crook (1999) Results. The figure shows the mean number of Paper Folding and Cutting items answered correctly by subjects after 10 minutes of hearing either the Mozart piano sonata, a period of silence, or listening to other music.

Requiem for the Mozart effect

A requiem is music written to honor the dead. It is odd to speak of a requiem for an effect but it is appropriate in this case. The original report was a startling but isolated claim. The authors provided no testable explanation of why this particular music was endowed with special properties or the nature of those properties. The neurophysiology of the effect and its linkage to mathematical reasoning was fragmented and speculative. The wide-spread endorsements of the effect came from commercial interests and committed advocates instead of the research community.

Yet the effect should be honored because it illustrates the scientific method in operation. The original report was subjected to the same process applied to all scientific claims. The report was followed by a series of studies by independent investigators who sought to verify and understand the effect. Researchers were able to build on the results of earlier investigations and move towards the critical studies, which indicated in this case that the original report could not be verified. The rise and fall of the Mozart effect is a case of effective science in action.

References available upon request from the PTN.



Kenneth J. Sufka, Ph.D.

Pain and Analgesia: Understanding Negative Reinforcement

Kenneth J. Sufka, Ph.D., University of Mississippi

Quick, define negative reinforcement? I've heard some faculty claim that roughly half their students in a first-year graduate learning course cannot correctly answer this question. Not helping matters any are the media that often confuse negative reinforcement with positive punishment. Negative reinforcement is an important concept in operant learning theory and it can be difficult to teach without good examples. One good example of negative reinforcement came to me by way of my very own research program.

One of my research interests in psychopharmacology is the study of chronic pain and analgesia. Pain is typically defined as the sensory and affective processes that follow noxious, tissue damaging stimulation. While there are several procedures for studying analgesic drug effects in animal models of chronic pain syndromes, they do possess certain limitations.

Nearly all pain assays rely on measurement of reflex. Thus, the study of pain and analgesia in animal models tends to focus on only one aspect of pain processing, the sensory component. What is ignored, then, is the study of the affect of pain and analgesia, and many argue that affect is probably the most important part of the overall pain experience. These concerns prompted me to search for a methodology in behavioral pharmacology that would allow me to address various questions about pain and the affective properties of analgesic drugs. My quest led me to the conditioned place preference (CPP) paradigm.

The CPP paradigm is a commonly used procedure in behavioral pharmacology to evaluate the affective properties of drugs. This procedure is based on traditional learning principles and involves the pairing of a drug state with an environment (i.e., a specific place) having distinctive stimuli. Following several drug-place conditioning trials, an animal's place preference is ascertained by recording the animal's approach behaviors to the drug-paired environment.

Animals show place preference to drug substances that possess positively reinforcing effects such as cocaine and amphetamine and, as such, the CPP paradigm is frequently used to determine the abuse liability of drug substances. However, it occurred to me that the CPP paradigm might be capable of quantifying another important property of drugs, their analgesic activity.

Analgesics are those drugs that reduce or eliminate the sensory and affective components of a pain.

While many analgesic drugs (e.g., heroin) possess positively reinforcing effects, all analgesic drugs, by definition, possess negatively reinforcing effects. Negative reinforcement is the increase in response strength due to the reduction or elimination of an aversive stimulus.

Thus, animals in chronic pain should display place preference to analgesic compounds due to the drug's ability to modulate the aversive affective component of the pain state. In a series of experiments, my research group sought to quantify the negatively reinforcing properties of analgesic compounds in an animal model of chronic inflammatory pain (i.e., Freund's adjuvant model of arthritis) using the CPP paradigm.

The T-shaped place preference used in these studies consists of two drug-conditioning compartments and one choice-start chute. The two conditioning compartments are stimulus distinct on the basis of visual (black vs. white walls), tactile (wire-mesh vs. metal-rod floor), and olfactory (cedar vs. pine chips in waste pans) cues. The choice-start chute, attached to the front wall of the conditioning compartments, permits animal access to these compartments during preference trials, but can be closed off during conditioning trials.

Control rats that receive saline in both conditioning compartments typically show a 50:50 choice preference between the two compartments. To simplify the interpretation of drug effects, we convert preference scores in drug-treated rats to a percentage of the saline control group. Thus, in non-inflamed rats, preference scores above 50% indicate positively reinforcing drug properties while preference scores below 50% indicate aversive drug properties. The key to quantifying negative reinforcement is to compare preference scores of adjuvant-inflamed rats who are experiencing pain to preference scores of non-inflamed rats.

In a series of CPP experiments we examined the reinforcing properties of a wide variety of compounds and present here the results of two of those experiments, one using the opioid receptor agonist morphine and the second using the non-competitive NMDA receptor antagonist MK-801. These two compounds have been shown to possess analgesic effects in traditional pain assays, with morphine being the gold-standard of analgesic agents and NMDA

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Elevation and Caring About the Good Deeds of Others

Jonathan Haidt, Ph.D., University of Virginia

Here's a puzzle: Why do we care when a stranger does a good deed for a stranger? Most theories in the social sciences say that people's actions and feelings are motivated by self-interest. So why are we sometimes moved to tears by the good deeds or heroic actions of others?

I study the moral emotions. I study the gut feelings and flashes of shame, anger, and disgust that make us feel condemnation or even hatred towards those who do bad things. My early work was on the emotion of disgust — a fascinating emotion that, for some reason, people seem not to want to think about.

It makes good evolutionary sense that human beings should have an emotion that makes us feel repulsion towards rotten food, excrement, dead bodies, and other physical objects that are full of dangerous bacteria and parasites. It also makes sense that disgust should make us hypersensitive to contagion, that is, we feel disgust towards anything that touched something that we find disgusting. Because bacteria and parasites evolved to spread by contact, our minds evolved to keep track of the contact history of the things that we touch and eat. So far so good.

But when my colleagues and I actually asked people in several countries to list the things they think are disgusting, we repeatedly found that most of the things people list are social offenses, such as hypocrisy, racism, cruelty, and betrayal. How on earth did a food-based and very corporeal emotion become a social and moral emotion? The short version of our attempt at an answer is that the motivational effects of disgust — distancing, separation, and rejection — may have been designed to deal with physical threats, but they were well-suited for dealing with social threats as well.

The emotion of disgust was therefore recruited, or co-opted, over the last few tens of thousands of years, to help people form groups, reject deviants, and build a moral community. We find social actions disgusting when they indicate to us that a person is in some way sub-human, morally defective, or in some other way “low” on a vertical dimension that runs from our conception of absolute good (God) above, to absolute evil (the Devil) below. This vertical dimension is found in many cultures, for example, in Hindu and Buddhist ideas that people are reincarnated at higher or lower levels depending on their moral behavior in this life.

I thought about the social nature of disgust in this way for several years, and about what exactly it means when someone moves “down” on this vertical dimension. But then, one day in 1997, I had my positive psychology awakening. I looked up. I had never thought about what emotion we feel when we see someone move up, acting in a super-human or saintly way. But once I began looking up, I began to see a whole new set of emotional responses. I have begun calling this set of responses “elevation.” I have now done several experiments on elevation, and here is what I have learned.

What is elevation?

Psychologists generally define emotions by their component parts, such as eliciting conditions, physiological changes, facial expressions, and motivations. Elevation can therefore be defined as follows: 1) Elevation is elicited by witnessing acts of moral beauty (e.g., compassion, courage, loyalty). 2) Elevation is experienced as a physical sensation of warmth, glowing, or openness in the chest, and sometimes as a tingling in the skin, particularly along the back, neck, and head. 3) Elevation motivates people to move towards higher moral ends, e.g., to help others, or to become better people themselves.

Elevation is widely known across cultures and historical eras. You probably recognize it yourself. But for some reason no psychologist has studied it empirically. Instead, psychologists have focused most of their energies on the negative moral emotions, especially guilt and anger.

Psychologists have thought about morality primarily as a system of rules that prevents people from hurting each other and taking their possessions. But I believe that morality is much richer and more balanced. Most people don't want to rape, steal, and kill. What they really want is to live in a moral community where people treat each other well, and in which they can satisfy their needs for love, productive work, and a sense of belonging to groups that they are proud of. When we see people behave in petty, cruel, or selfish ways it gives us a visceral sense that we do not live in such a world. But when we see a stranger do a simple act of kindness for another stranger, it gives us a thrilling sense that maybe we do live in such a world.

The fact that we can be so responsive to the good

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Jonathan Haidt, Ph.D.



B. Jean Mason, Ph.D.



Daniel J. Bernstein, Ph.D.

Is Instructional Technology Worth the Time? Your Answer May Depend on Your Assessment.

B. Jean Mason, Ph.D. and Daniel J. Bernstein, Ph.D., University of Nebraska at Lincoln

Teachers are often encouraged to incorporate computer-based instructional supplements into their courses, usually with the goal of increasing students' active involvement with course material. Although technologically savvy supplements can pique students' interest and enhance their willingness to spend out-of-class time working with course material, developing these high-tech teaching aides requires a considerable investment of an instructor's time and resources. To help ease this burden, software and publishing companies now produce countless computerized instructional modules, web-based course management shells, and other high-tech supplements.

Faced with this ever expanding palette of technology-based teaching methods and innovations, teachers need to ask whether the time invested in learning additional teaching skills is worth the effort. Students' generally report positive views toward computer-based supplements, but an increase in liking does not always correlate with an increase in learning; making changes in teaching just for the sake of appearing modern is a time consuming luxury that few instructors can afford. So it is important to know if the up front time required to incorporate computer-based innovations into the course mix will result in substantial gains in student understanding.

We addressed this question empirically in a study measuring differences in student learning in response to various instructional methods. We used four methods of instruction (interactive computer program with visual and text components, computer program utilizing only text descriptions, video-taped lecture, and textbook readings) to teach participants basic principles and procedures of a jargon (specifically targeting proper jail cell searches). Learning was measured immediately following completion of the instructional unit using both a traditional written test (including multiple-choice, fill-in-the-blank, and essay questions) and a form of authentic assessment. We created a behavioral measure of participants' understanding of the material by placing participants in a mock jail cell and providing an opportunity to demonstrate the correct procedures.

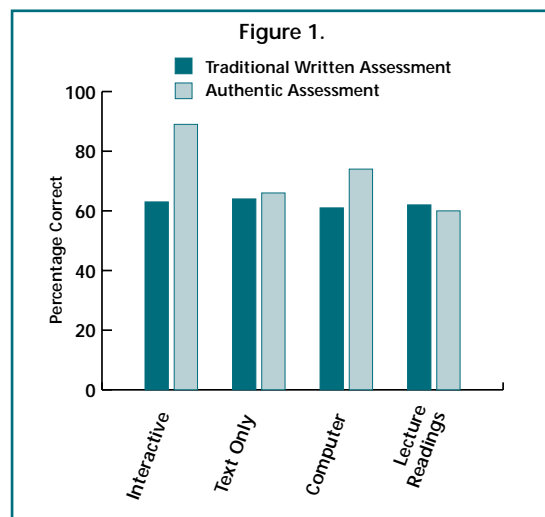
As with any empirical investigation, choosing what to measure is critical to the results that will be observed. We were evaluating a professionally

produced interactive multi-media program designed to improve a well understood skill, and we had the opportunity to compare the impact of the program on different measures of that skill. In particular we compared what Perkins (1998) called representational and performance measures of the target of understanding. Perkins argues that a performance measure (behavior situated in a meaningful, non-verbal context) taps a deeper understanding than a representational measure (verbal descriptions of ideas or principles), and we created two distinct measures of understanding according to this framework.

The answer to the question "is instructional technology worth the time?" depends on how the instructional goal is measured. The interactive multimedia component of the program generated increased understanding when measured by actual performance. When understanding was measured in the conventional paper and pencil format, however, there was no advantage to adding an interactive multimedia component to traditional teaching procedures (lecture and reading).

Figure 1 shows the percent correct for each teaching method, and the single most significant finding is that the percentage was highest for authentic assessment (performance understanding) of learning by interactive multimedia instruction. When we used conventional written assessment (representative knowledge), there was no difference among the

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Pain and Analgesia, from page 6

receptor antagonists having potential therapeutic benefit for human chronic inflammatory conditions. Our primary purpose was to quantify the negatively reinforcing properties (i.e., the affective response to analgesics) these compounds possess in an animal model of chronic inflammatory pain.

In the first experiment, morphine produced place preference in both adjuvant-inflamed and non-inflamed groups (see Figure 1A). The observation that non-inflamed rats displayed a place preference to morphine reveals morphine's positively reinforcing properties.

However, preference scores for adjuvant-inflamed rats were significantly greater than non-inflamed rats. If the preference scores in inflamed rats reflect the sum of morphine's positively and negatively reinforcing effects, then the difference in preference scores across inflammation conditions provides a quantitative measure of morphine's negatively reinforcing properties.

In this experiment, low and high doses of morphine displayed potent negatively reinforcing effects under conditions of chronic pain. These data support the notion that opioid agonists can modulate the affective component of pain processing.

We found a somewhat different pattern of negative reinforcement in the NMDA receptor antagonist study (Figure 1B). MK-801 produced place aversion in non-inflamed groups. However, in the inflamed rats, low doses of MK-801 produced place preference, whereas high doses led to place aversion. Low doses of MK-801 possess negatively reinforcing properties in rats in chronic pain, but higher doses appear to generate unpleasant side-effects.

By using a negative reinforcement model, we demonstrated that both NMDA receptor antagonists and opioid receptor agonists can modulate the affective component of chronic pain.

While traditional animal paradigms in pain research have been limited to analysis of analgesic drug action on the sensory component of pain processing,

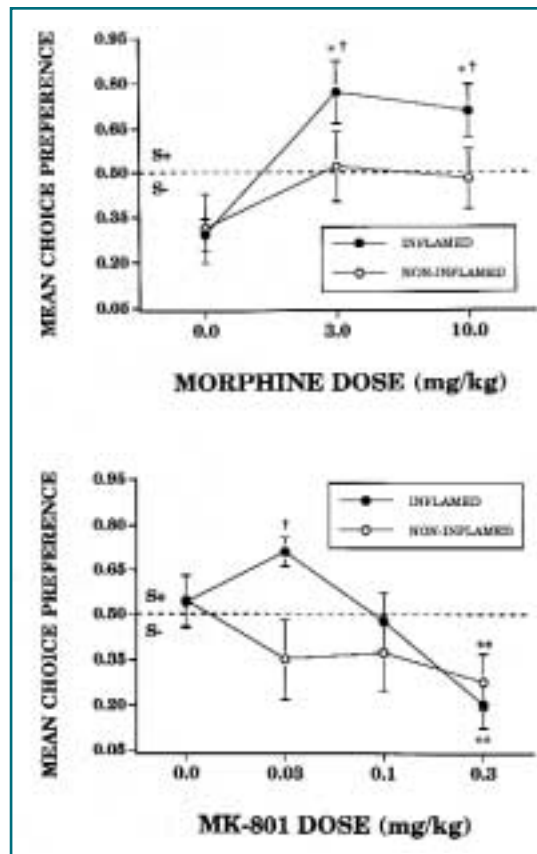


Figure 1. Mean preference scores as a function of drug dose for inflamed and non-inflamed animals receiving either morphine (Panel A) or MK-801 (Panel B). Vertical lines are SEM.

* indicates significant place preference compared to 0.0 (saline) controls.

** indicates significant place aversion compared to 0.0 controls. † indicates significant negative reinforcement compared to respective dose for non-inflamed animals.

our studies demonstrate that the CPP paradigm can quantify analgesic drug negative reinforcement. Given that emotion is such a significant clinical indicator of chronic pain and its treatment, we hope this paradigm will become an important assay in the discovery of novel analgesic drugs. At the very least, it has helped me communicate to my students one of the more difficult concepts in operant learning theory.

Good Deeds, from page 7

deeds of others, even when we do not benefit directly, is a very important fact about human nature. Positive psychology takes this fact seriously, and seeks to create a balanced picture of human nature and human potential. Yes, people can be terribly cruel, and we must continue our

study of the conditions that lead to racism, terrorism, and other social ills. But there is a brighter side to human nature too, as we all saw in the days after September 11. How many of us were not moved to tears at some point, tears of elevation in addition to tears of sadness? For me many of the most moving moments were

seeing the respect, love, and sympathy that complete strangers showed to the firefighters, living and dead, in the days and weeks after the tragedy. Such uplifting moments can never balance out the horrors of what happened, but they can reassure us that most people do indeed care about the lives and fates of others.

Important reminders from TOPSS: Check the TOPSS web site for updates and announcements about our initiatives! Go to <<http://www.apa.org/ed/topsshomepage.html>>



David Johnston

Using a WebQuest for a Research Project

David Johnston, Southeast Polk High School, Runnell, IA

One of the goals of TOPSS since its inception has been to emphasize the scientific basis of psychology. An important part of that scientific basis is research, and textbooks are replete with examples of research projects that have literally changed the way we think about various areas of psychology. For its part, TOPSS is actively involved in sponsoring contests that focus on research such as the TOPSS Scholar and Excellence in High School Student Research competitions. Additionally, there are a number of high schools doing quality research every year. The Whitman Journal of Psychology provides examples of amazing research projects that are being conducted regularly by high school students.

What, however, is the norm for research in high school psychology classes? How many psychology classes do no research whatsoever? No statistics are available to show the number of classes that do research, but it is probably safe to say that the classes that require research projects are in the minority. The fact that a particular teacher does not require students to do research does not make that teacher or class inadequate. Nonetheless, given the current emphasis on authentic assessment and active learning, a research project would be an important tool in helping students develop educational skills and psychological knowledge.

On the other hand, the decision that research is important and should be included in the psychology curriculum opens the door to a plethora of new issues. A major problem for some teachers is a limited background in the area of psychological research. There are states that have no certification requirements for teaching psychology and a number of others where the requirements are minimal. In many schools, the psychology teacher is a social studies teacher or, possibly, a guidance counselor, each of whom either volunteered or was assigned to teach the psychology classes. As such, even excellent teachers with the best of intentions may lack the background to help students with serious research. Additionally, even for those who have the necessary background training, helping high school students conduct research is a major commitment of time, energy and resources added to an already overloaded teaching schedule.

If the high school is located in a college or university town, the task might be made a bit easier by enlisting assistance from the college professors, but most high schools do not have that advantage. Other problems that may arise for some teachers are the lack of time available in a one-semester class or, possibly, the ability of students in the class. Not

everyone teaches advanced placement students.

So, what can you do if full-bore research is not an option and you want something different from the traditional term paper? The WebQuest is a relatively recent innovation in research that is being used successfully on many grade levels and may be an answer for teachers trying to incorporate a research project into their classes.

The WebQuest is not a traditional form of research involving a hypothesis, independent and dependent variables, randomization, etc. As such, it does not require the considerable time necessary to teach the research process from scratch. However, it does involve the use of technology, group work, higher-order thinking skills and, by conventional standards, a unique finished product.

How a WebQuest works

When using WebQuest, the teacher raises a question for students, who are placed in groups to seek an answer. The typical group has four members and each student has a role to play in an attempt to find a solution. For background information, there is a list of sites that all group members visit and research. Each team member then searches another set of sites that are specific to his or her role. Once all the research is completed, students must work together in their teams to create a finished product. The product is then presented to someone with real-world expertise in the subject at hand. For an expanded overview of the WebQuest process, go to the site at the end of the article. The information provided at this site comes from Bernie Dodge, one of the originators of the WebQuest concept.

Advantages of the WebQuest

As mentioned previously, the WebQuest involves the use of technology, primarily the internet. One advantage of the WebQuest is that students do not wander about on the internet, possibly landing on sites that would raise questions in the mind of even the most tolerant administrator.

The sites are pre-selected and of sufficient number to keep students appropriately occupied. Additionally, because the sites are pre-selected, the teacher will have a much better idea of how much time will be necessary for the research process.

A second advantage is that most WebQuests are done in groups wherein students either choose or are assigned roles which are designed to provide group members with different points of view. However, in

See WebQuest, page 11

September 11, from page 1

needed to be done” in the aftermath of the attacks. Some people may feel a sense of intense fear and/or anxiety about the future, and these feelings may continue and may be exacerbated as events unfold. Others may feel an overwhelming sense of sadness or depression surrounding the events of September 11 and their aftermath. Moreover, physical symptoms—such as nausea, loss of appetite, headaches, nervousness, gastrointestinal distress or chest pains—may also be common.

But people also appear to have a desire to be close with those they care about—their neighbors, friends, and families, and many people have reported feeling a need to get in touch—or get “back in touch”—with important people in their lives. Many people may have felt a need to talk about the trauma and their fears about the future (although I might add that many people may want to talk longer than others may want to listen—so conflicts and small arguments may also be common). Many people may feel a sense of relief and good fortune relative to those whose losses were greater than theirs, and many may find themselves focusing on their “luck” or “good fortune”. But simultaneously, this sense of relief may also be accompanied by a sense of “survivor guilt”. Finally, many may have felt a need to do something, perhaps to regain a sense of control, or simply to help out in some small way. Thus, we have seen an outpouring of donations—of blood, of money, or volunteering one’s time or services for recovery

efforts or for survivors of the attacks. In fact, some people have reported finding unexpected positive consequences in the wake of the September 11th attacks and their aftermath—such as stronger relationships with others or learning what is important in life.

A great deal has been written about how people are “supposed” to cope following the events of September 11th. However, how people are “supposed” to respond often stands in sharp contrast to the research data on coping with loss. One thing that we do know about how people respond to trauma is that there is no one, universal response. People will respond to this event in many different ways. We should not expect an orderly sequence of “stages” of emotional response. We should not look at the calendar and expect “recovery” after a few weeks or months. We should also not assume that distress is necessary to get past these events, and that failure to experience emotional distress is indicative of pathology. We should not expect that, if a person did not experience a “direct” loss, that he or she will not be greatly affected by this tragedy. There is really no “right” or “wrong” way to cope with the terrorist attacks—there are just “different” ways. We can perhaps best help ourselves and our communities by recognizing and respecting people’s needs to respond to this trauma in their own way, and with their own timetables. Only in this way can we as a country hope to pull through this trauma intact, and hopefully even stronger, as a result.

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order to complete the project, the group members must use the evidence they have gathered to reach some sort of compromise.

A third, and quite important, advantage is that the WebQuest format requires students to engage in higher order thinking. Students must analyze and synthesize what they have read and develop a point of view that they can support with facts.

A fourth advantage is that the group must then create a finished product that an outside expert scrutinizes. An example could be a letter taking a well-reasoned stand on the assigned problem that you send to a newspaper or to a politician.

The WebQuest is by no means the answer for everyone or every situation. There are high school programs that involve research that is more sophisticated than the WebQuest. However, for many programs, the WebQuest is a very viable option and, even for more sophisticated programs, may serve as a springboard to more in-depth research.

Currently, WebQuests are available in many different curricular areas at many different grade levels, though psychology has yet to develop a significant WebQuest presence. If you are interested in creating a

WebQuest, a number of sites are available that can provide guidance and a structure for completing the project. One particularly useful site is Filamentality, which provides a step by step process for creating WebQuests. Creating a new WebQuest is not something that will be completed in a couple of hours. Finding and sorting pertinent websites will take a long time. If a media specialist is available to help search, do not be reluctant to ask for assistance. For a specific example of a psychology WebQuest, go to the site below where you will find a WebQuest entitled *TV The Violence Teacher?* The site listed below may first take you to another page in Filamentality which will, in turn, lead to the WebQuest. I created this WebQuest last spring and have yet to use it in a classroom situation. I would appreciate any feedback < johnstond@se-polk.k12.ia.us > .

If you wish to explore the Filamentality site to view other examples of WebQuests, go to the title bar at the top of the main Filamentality page and click on FIND. The next page will provide options for exploring the available WebQuests.

USEFUL WEBQUEST SITES:

Overview: <http://edweb.sdsu.edu/courses/edtec596/about_webquests.html>

TV Violence WebQuest: <<http://www.kn.pacbell.com/wired/fil/pages/webtvvioleda.html>>



William Dement, M.D.

Answered by William Dement, M.D., Stanford University

A panel of noted clinical, experimental and academic psychologists has graciously agreed to reply in this column to questions submitted by teachers and students. We invite you to send your questions to:

DEAR DOCTOR, PTN, Education Directorate, 750 First Street, NE, Washington, DC 20002-4242

Question: Is there a name for the 'jerking' sensation that we get sometimes as we fall asleep? That sensation of falling or jerking awake? Why does that happen?

Question: submitted by students of Dan Rozanas, Alta High School, Sandy, Utah.

Almost everyone has experienced a sudden and unpleasant startle accompanied by a muscle contraction or jerk as they fall asleep. The startle is usually associated with vivid visual imagery and most often a feeling of falling. Most people feel that the convulsive movement is the effort to avoid the fall or to catch oneself. These sleep onset startles have several names: hypnic jerks, sleep starts, hypnic myoclonias.

Many people think that at the onset of sleep, there is a dissociated occurrence of REM sleep imagery, and that the jerk is a response to a REM hallucinatory visual and kinesthetic imagery. Usually in normal REM sleep, which occurs later in the night, movement cannot occur because of an active inhibition of muscle movement. This inhibition is a major and essential component of normal REM sleep.

Most people experience hypnic jerks only occasionally and are therefore unconcerned. Various surveys suggest that at least 70% of adults have experienced one or more, but not frequently enough to become a problem. However, in the same way that being severely startled in the waking state is unpleasant, sleep startles are never regarded as pleasurable or even neutral. At the present time, the cause is not understood.

To place the phenomenon of sleep starts in perspective, we must remember that every night nearly every person undergoes an astounding metamorphosis—a transition from the state of wakefulness to the state of sleep that everybody but insomnia sufferers take completely for granted. In less than a second, many billions of neurons in our central nervous system change their mode of functioning in a precisely coordinated fashion.

The most dramatic behavioral aspect of this metamorphosis is that at precisely the moment of transition, our awareness and ability to respond meaningfully to the world around us abruptly cease. Even if our eyes happen to be wide open, and we are looking at and hearing people and events around us, in a millisecond we will become blind, deaf, and completely unaware of our environment. If we awaken in a few seconds or minutes for whatever reason, we are

instantly back in touch with the real world. The only exception is when we have been deeply asleep. Arousal may be associated with grogginess, but we are still aware of the outer world.

My long time colleague Christian Guilleminault and I carried out experiments characterizing the transition from wake to sleep and vice versa over twenty-five years ago. (Most knowledge about sleep, some of which is extremely important in understanding behavior, has not made it into psychology curricula. My announcement in this edition of *PTN* is an attempt to remedy this situation.)

Sleepy adult volunteers who had slept only four hours the night before they came to the laboratory lay supine on a gurney while very bright strobe light flashes were directed into their eyes from a light six inches above the face. The flash rate averaged about one every six seconds. The subjects were requested to press a microswitch whenever they saw the light flash. Brainwaves were recorded continuously. To be absolutely sure the subjects could not miss the flash, their eyelids were taped open.

After pressing the microswitch a number of times, they would suddenly stop. Whenever the subjects did not press, if asked, they denied seeing the flash. In every instance when the brain wave patterns of wakefulness were present, subjects saw the flash and pressed the switch. Likewise, whenever waking brain wave patterns gave way to NREM stage one, subjects did not press the switch and did not see the flash. The instant waking brain wave patterns reappeared, subject invariably saw the strobe light flashes again.

Thus, their retinas were flooded with bright light, and yet the subjects were absolutely sure there was not a flash if a wake to sleep transition had occurred. Often the sleep was so brief that subjects weren't even aware they had slept, and yet in that moment of sleep, at the instant of sleep onset, the door of perception between the brain and the outside world had slammed shut. Thus the entire perceptual system undergoes an instantaneous change; we do not see; we do not hear; we do not feel. Over the years, similar results have been reported by other investigators.

Of course, the absence of aware-

ness does not mean that the sensory organs have ceased functioning. The brain continues to receive sensory input, evoked potentials can be re-recorded from the scalp; but the processing of the input is radically altered, probably at the level of the thalamic relay nuclei. Investigators have reported marked changes in post-synaptic potentials in these areas at the moment of sleep onset in experimental animals. Also, it is clear that auditory and tactile stimulation of adequate intensity can always arouse a sleeping person. In contrast to coma or anesthesia, in addition to cessation of consciousness of the outer world, a second defining characteristic of sleep is reversibility.

At the moment of sleep, or very close to it, there is also a cessation of long-term memory storage. If sleep continues long enough for short-term memory traces to fade, there will be a retrograde amnesia for events in the minutes prior to sleep onset. Mental content tends to shift to visual images (hypnagogic imagery) as individuals fall asleep. Occasionally this imagery reaches a hallucinatory level of intensity.

There are many other changes throughout the central nervous system at the moment of sleep that have yet to be detailed. However, given the magnitude of what happens, it is little wonder that occasionally the neuronal coordination of the change in state is less than perfect. There might be an intense and inappropriate burst of neural activity in the vestibular system leading to the hallucinatory perception of moving or falling. The vigorous movement or startle that results is usually sufficient to terminate the falling asleep process. It may well be that other types of incoordination occur but do not awaken us.

Some people wake up with sleep paralysis, the inability to move, which is certainly a prolongation of the paralyzes of REM sleep. Very rarely, waking up is associated with a few seconds of not even knowing who we are. Though many people have had this experience it is relatively rare in terms of frequency. I would conclude by saying that sleep starts are at the tip of the iceberg in being a symbol of this truly incredible change in our state of existence.

Internet Research Activity & Psychology Newsletter Project

Debby Park, West Deptford High School, Westville, NJ

As your students investigate psychological disorders, their learning occurs along many dimensions. They will find that many of the stereotypes and beliefs they presently hold are inaccurate. They also discover that there are different ways to explain these disorders, specifically from the psychoanalytic, learning and biological perspectives. Further, through discussions and activities, they will become more aware of the impact mental disorders can have on not only an individual as well as on family and friends.

A great way for the students to bring these different dimensions together is to publish a newsletter. What they have learned can be shared with the rest of the school, and even with the community if you wish. I usually plan this for the last week or two of the semester and get the newsletter published by the last day! Students write the articles, edit them, and may even do all the typing for you.

Here is a general plan to follow if you choose to use the activity/project with your classes.

- Complete the unit on Psychological Disorders. As part of this unit you may also discuss other emotional and physical disorders such as autism, eating disorders, alcoholism, sleep disorders, ADD/ADHD, etc.
- Have the students choose topics they are interested in (I recommend three choices) and assign them one to research further in the library and computer lab. In their investigation I tell them to become somewhat of an expert on the behaviors that characterize each of the disorders and on the causes and the treatments that are available.
- Require them to complete at least two article reviews (periodical reviews of literature and research articles) and summaries of information from Internet sites on their topic. It is important that they do not simply repeat the information provided in the textbook or by class lectures. I tell them to look for information that will add to what we have learned in class.
- Require at least an outline or a graphic organizer of the main ideas of the sites/articles read the day after working in the lab or library. We usually spend two days in the library or lab and the rest they do on their own.
- Mandate that students submit an article for review by the class. The class can then choose at least

eight to ten articles that will be peer-edited and revised. Students can plan the format and layout of the newsletter – of course they have to name it! Ours is called *Get Psyched!* Graphics will have to be added and students interested in typing the newsletter will begin working on it.

- Allow students to draw a picture that relates to an article. Original poetry can be submitted by students that relate to the topics, as well as personal “stories” or interviews with people that have first-hand knowledge of what it is like to experience one of these disorders in their families. Sometimes these personal accounts are written anonymously. I always tell the students to see me personally if they want to submit an article in this fashion. Book and movie reviews that relate to any of the topics are also great to include.
- Get everyone in the class involved in the writing, editing or distribution of this newsletter. It can be distributed to just your classes or the entire school. We send it to the Middle School Library, the Board of Education office and the local public library. The school nurse keeps copies in her office for students to read, as does our high school library.
- Give the students specific Internet sites that you want them to use. Other sites may be used but approval of the site is recommended because there is too much misinformation that they can encounter if they search on their own. In our newsletter, we include a list of sites that may be useful to individuals who want to find out more about the topics we write about. We might also include a list of books for recommended reading. When the newsletter focuses on mental health issues, I recommend the sites.

A newsletter project like this is beneficial for any unit, or as a final project at the end of a marking period or semester. Reports by students on different areas of psychology are of interest to everyone. I get requests for our newsletter now and the students take great pride in its production.

If you would like more information on this project, or a sample copy of *Get Psyched!* you can contact Debby Park at cdpark@bellatlantic.net or 1-856-848-6110 ext. 2237.

A list of internet sites for mental health are available upon request from the PTN.



Debby Park

TOPSScholars Competition: Submissions due by January 31, 2002
TOPSS Teacher Awards: Nominations due by January 31, 2002

I Have Information You Want, And I Need Your Help To Make It Free, Free, Free...

It is time to integrate knowledge about sleep-related determinants of human behavior into the teaching of psychology at the most introductory level. In order to facilitate this integration, we are soliciting responses from teachers of psychology in secondary schools. If enough of you respond, we feel that we will be able to make outstanding teaching materials available at no cost. Two very important sleep-related determinants of behavior that are not usually included are (a) sleep debt and (b) clock-dependent alerting. Understanding these processes and how they interact with other determinants of behavior ought to be an absolutely essential part of academic psychology.

What is sleep debt? Each individual has a specific sleep requirement, an average amount that must be obtained each night. All amounts less than this constitute lost sleep. All lost sleep accumulates as a sleep debt. The size of the sleep debt is a major determinant of the level of waking impairment. The sleep debt can only be reduced by extra sleep.

Clock-dependent alerting consists of lengthy intervals of stimulation arising internally from the biological clock (suprachiasmatic nuclei) that alert the brain at specific times during the 24-hour cycle. Clock-dependent alerting could be likened to the effect of ingesting a stimulant in the morning whose activity would last through the day and subside around bedtime.

I have developed extensive materials for high school and college psychology instructors who would like to include a module on the "basic essentials of sleep knowledge" in their Introductory Psychology courses. These include *The Stanford Sleep Book for College Students*, images on slides, PowerPoint, and/or CD-ROM, additional readings, and videotapes. Modules can be designed for one class, several classes, or extensive coverage. If there is a good response from TOPSS members indicating a real interest, there is a good chance of obtaining grant support that will enable distribution of some or all of the above materials free or substantially less than cost.

If you would like to participate in such an initiative, please send the following information:

Name: _____ School/Affiliation: _____
Address: _____
Phone: _____ Fax: _____
Email: _____

Please send this information by either email to dement@stanford.edu or by postal mail to Dr. William C. Dement, Sleep Research Center, Stanford University, 701 Welch Road, Suite 2226, Palo Alto, CA 94304.

Teaching Conferences and Workshops in 2002

The 24th Annual National Institute on the Teaching of Psychology

January 3-6, 2002

The TradeWinds

St. Petersburg Beach, Florida

Web Site: <http://www.nitop.org/>

For additional information, please go to the conference website listed above or contact:

Joanne Fetzner

Phone: (217)398-6969

Email: jfetzner@uiuc.edu

Southeastern Conference on the Teaching of Psychology

February 22-23, 2002

Kennesaw State University

Kennesaw, Georgia

Web Site: <<http://ksuemail.kennesaw.edu/~bhill/setop14.htm>>

For additional information contact:

G. William Hill

Phone: (770) 423-6257

Email: BHILL@KENNESAW.EDU

The 9th annual Midwest Institute for Teachers of Psychology will be held concurrent with the 2nd annual **Midwest Institute for Students of Psychology** at the College of DuPage • Glen Ellyn, Illinois (25 miles west of downtown Chicago) on March 1 & 2, 2002.

For information, contact:

Patricia Puccio

Phone: (630) 942-2325

Email: Puccio@cdnet.cod.edu

Terman Teaching Conference - Western Psychological Association

Wednesday, April 10, 2002

Irvine, California

<http://www.westernpsych.org/>

Register through the Western Psychological Association, 5929 Westgate Boulevard, Suite C, Tacoma, WA 98406 (408-924-7233).

TOPSS WORKSHOPS IN 2002

Rocky Mountain Psychological Association Meeting

Mini-workshop for psychology teachers

Park City, Utah

April 4-6, 2002

(date and time to be determined)

Belmont University in collaboration with the Educational Testing Service

Nashville, Tennessee

April 12-13, 2002

Southwestern Psychological Association Meeting

April 19-20, 2002

Corpus Christi, Texas • Omni Bayfront Hotel

For information, contact:

Martha Braswell

Phone: (800) 374-2721, ext. 6140

Email: mbraswell@apa.org

Call for Nominations – 2002 Teaching Awards

Sponsored by the Society for the Teaching of Psychology (STP) Division Two of the American Psychological Association

The Society for the Teaching of Psychology (Division Two of the American Psychological Association) announces its 2002 program of awards for outstanding teachers of psychology. Teaching awards of \$750 and a plaque are bestowed for outstanding performance in each of four environments:

- Four-year Colleges or Universities: Robert S. Daniel Awards
- High Schools: Moffett Memorial Teaching Award
- Two-year Colleges
- Graduate Students: McKeachie Early Career Award

Criteria

Nominations will be judged on the following criteria by a panel including previous award winners. Nominees will not be expected to have achieved recognition in all areas. In particular, some criteria are not relevant for all teaching environments.

- 1. Demonstrated influence in interesting students in the field of psychology.** Documentation could include papers or projects completed by students; evidence of students presenting papers at professional meetings or of students subsequently publishing their work done with this teacher; actions by the teacher, both curricular and co-curricular, intended to increase student interest and involvement in psychology (e.g., encouraging students to major in psychology at a university or college).
- 2. Development of effective teaching methods, courses, and/or teaching materials.** Documentation could include description and sample of methods, materials, course syllabi, and evidence of successful utilization.
- 3. Outstanding performance as a classroom teacher.** Documentation could

include student evaluations, enrollment figures, and evaluative observations by colleagues, teaching awards, and other forms of prior recognition.

- 4. Concerns with professional identity as a teacher of psychology.** This might be seen as professional activity on or away from campus, including publications of articles on teaching, stimulation of student research, community presentations about psychology, attendance at professional meetings or workshops relevant to the teaching of psychology, or memberships in organizations indicating such identification.

Winners will be notified in advance. Awards will be presented at a special Society for the Teaching of Psychology program at the 2002 meeting of the American Psychological Association in Chicago, IL. If a winner cannot attend, STP will appoint a representative to make the presentation at the winner's home campus at a time convenient to the winner.

The nominator and nominee, working together, must complete all documentation in support of the nomination. Responsibility for accumulating supporting documentation

cannot be assumed by the Awards Committee. For ease of the review process, many nominees send materials in bound form (e.g., ring binder or spiral bound). In any case, submitted materials should not exceed 2 inches in width. Nominations are to be sent to Chairperson of the Awards Committee and must have a first-class postmark **not later than January 11, 2002**. Materials will be returned after the review process. However, nominees are encouraged to keep a photocopy of their materials.

These awards are designed to recognize teachers all across the country, including those who do not belong to STP and who are not nationally known. Renominations and self-nominations are acceptable. STP reserves the right not to make an award in a particular category if the Awards Committee believes no nominee is qualified in a particular year.

Send materials to: Dr. Dana S. Dunn, Chair, The Society for the Teaching of Psychology Awards Committee, Department of Psychology, Moravian College, 1200 Main Street, Bethlehem, PA 18018-6650. He can also be reached at (610) 861-1562 or via e-mail: dunn@moravian.edu.

Funding Opportunities

Board of Educational Affairs (BEA) Block Grants

To enhance the quality of teaching and learning outcomes, the APA Board of Educational Affairs reviews proposals for financial support to award \$5,000 in BEA Block Grants each year.

Criteria:

- Purpose of the conference is to advance the teaching of psychology at the secondary, 2-year college, or 4-year college level.
- Grants of up to \$1,000 must be requested by the APA Member(s), Associate(s), or Affiliate(s) directing the teaching conference, including a description of the use of grant funds.
- A conference brochure/announcement should accompany the request for funds.
- Following the conference, the director will

submit a description of the use of grant funds.

Deadlines:

Funding requests for teaching conferences in 2002 should be **postmarked by February 1, 2002**. Upon receipt of applications, a subgroup of the BEA will make funding recommendations for consideration by the Board of Educational Affairs at its March 15-17, 2002 meeting.

If funding remains after allocations are made at the March 2002 meeting, the Board will accept and consider proposals at its October 2002 meeting.

Please send written requests to Martha Braswell, Education Directorate, American Psychological Association, 750 First Street, NE, Washington, DC 20002-4242

APF Nationwide Psychology Program

To support TOPSS in the development of grassroots efforts among psychology teachers, the American Psychological Foundation (APF) receives proposals and distributes modest grants each year through the Nationwide Psychology Program. These funds are made available for state-wide initiatives such as mailings, workshops, and institutes that support the formation of regional networks of psychology teachers. Send proposals to Martha Braswell, American Psychological Association, 750 First Street, NE, Washington, DC 20002-4242 or by email to mbraswell@apa.org. Be sure to include a justification/rationale for how a specific project would build local networks and enhance high school psychology on a local basis.

Psychology Teacher Network is published by the Education Directorate of the American Psychological Association. Subscriptions are free to High School Teacher Affiliates of the APA and APA Members and \$15 a year for all others. Address editorial correspondence to *Psychology Teacher Network*, Education Directorate, APA, 750 First St., N.E., Washington, DC 20002-4242; (202) 336-6140. Address inquiries regarding membership or affiliation to the Membership Office, APA, at the same address.

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Assessment, from page 8

teaching methods in student learning. From the framework argued by Perkins, students learning via interactive computer demonstrated a deeper understanding that was not detected by a conventional verbal measure.

These findings highlight two important issues for teachers: 1) it is important to design assessments that accurately reflect the kind of learning you wish to promote, and 2) investment in labor-intensive development of technological aids to teaching may be most helpful in achieving instructional goals that go beyond simple verbal answers.

If the instructional goal is deep understanding as measured by the ability to translate verbal principles into actions in novel contexts, instructional technology provides an effective means of promoting that kind of deep understanding. In these cases, technologically enhanced modules create a unique learning environment in which students can “virtually” explore and practice new skills; activities that are difficult to reproduce in a typical classroom. If instructional strategies are in place to promote deep understanding, it is important that assessments of learning include measures beyond simple verbal descriptions of principles or ideas.

Our results suggest that a teacher who relies on conventional verbal assessment might conclude that interactive multimedia teaching is not worth the effort. Consideration of the deeper understanding revealed by a more authentic assessment shows that the extra effort is worthwhile and produces a measurable increment in meaningful performance.

REFERENCE: Perkins, D. (1998). What is understanding? In M.S. Wiske (ed.), *Teaching for Understanding: Linking research with practice* (pp. 39-57). San Francisco: Jossey-Bass.

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