

Assessing and Managing Technostress

A talk given by Richard A. Hudiburg, Ph.D. at the session "Collaborative Solutions to Technostress: Librarians Lead the Way." Program sponsored by the Association of College & Research Libraries Instructional Section at the 115th Annual Meeting of the American Library Association, July 8, 1996, New York, New York.

*Opening scenario #1

A library patron enters today's library and looks for the trusty "card catalogue", finding none he asks "where's those beautiful wooden cased card catalogs?" The patron is shown a row of shiny new computer terminals and is told "we traded in the cellulose for silicon and magnetic tracks". Now the new world of information is available to you through a keyboard and monitor. The patron meekly eyes the cybermachines and remembers the old days of fingering through the cards and discovering a shared history of the slow search for knowledge. The patron comments "I'm not very good with computers." The patron sits down at the computer and touches a key and suddenly the sleepy computer screen comes to life offering technobabble and a special "help" key that tells all. The patron touches another key and a message reads "key is not recognized by this configuration of the information interface, if you need help press F1." At a place far removed from the library, a patron dials into the local library's online catalog. The patron successfully signs on the system and the catalog menu appears. To get help with search questions, the screen message instructs the user to press the F14 key but the patron's keyboard only goes up to F12.

This scenario could be an example of "technostress" as it might apply to library users. Later we will consider another scenario applicable to librarians.

*Technostress--defined

Craig Brod (1984) defined technostress, in his book *Technostress: the Human Cost of the Computer Revolution*, as "a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner. It manifests itself in two distinct and related ways: in the struggle to accept computer technology, and in the more specialized form of overidentification with computer technology." Our focus on Technostress will be with the first type described by Brod and labeled by researchers with various terms like: technophobia, cyberphobia, computerphobia, computer anxiety, computer stress, negative computer attitudes, and computer aversion.

Brod (1984) further elaborates the symptoms of technostress: "The primary symptom of those who are ambivalent, reluctant, or fearful of computers is anxiety. This anxiety is expressed in many ways: irritability, headaches, nightmares, resistance to learning about the computer or outright rejection of the technology. Technoanxiety most commonly afflicts those who feel pressured--by employers, peers, or the general culture--to accept and use computers".

Before we delve into specifics concerning technostress and librarians, it would be instructive to examine the concept of stress in more general terms.

*STRESS:

*Definitions of stress--

The term stress has multiple meanings. As Richard Lazarus stated in his 1966 book *Psychological Stress and the Coping Process*: "It seems wise to use 'stress' as a generic term for the whole area of problems that includes the stimuli producing stress reactions, the reactions themselves, and the various intervening processes. Thus, we can speak of the field of stress, and mean the physiological, sociological, and psychological phenomena and their respective concepts. It could then include research and theory on group or individual disasters, physiological assault on tissues and the effects of this assault, disturbances or facilitation of adaptive functioning produced by conditions of deprivation, thwarting or the prospect of this, and the field of negatively toned emotions such as fear, anger, depression, despair, hopelessness, and guilt. Stress is not any one of these things; nor is it stimulus, response, or intervening variable, but rather a collective term for an area of study." (Lazarus, 1966, p. 27). With this in mind, let us look at the physiological and psychological aspects of stress.

*Physiological aspect of stress--

Hans Selye first introduced the term stress to medicine in 1926, as a result of conducting medical research to develop a new ovarian hormone. He and his colleagues noted that the research animals used (rats) in the study experienced changes to various glands and the stomach that were not related to effects of the hormone injections received. Similar changes in glands and the stomach resulted when other animals were exposed to various stimuli (cold, heat, infection, trauma, hemorrhage, nervous irritation, etc.). He induced the "syndrome of just being sick" which resulted in adrenal enlargement, gastrointestinal ulcers, shrinkage of the thymus and lymph nodes. He termed this the "general adaptation syndrome or biologic stress syndrome". According to Selye "stress is the nonspecific [common] response of the body to any demand made upon it". This definition views stress as a physiological response and stressor as the demand that evokes the response.

Selye was primarily concerned with what is going on inside the skin when a person is stressed.

With this in mind, I will give a brief description of what types of internal changes might take place in a person while using computers.

Research has shown that persons experience higher levels of adrenaline and noradrenaline during work periods with computers (Arnetz & Berg, 1993). Adrenaline and noradrenaline are catecholamines secreted by the adrenal gland. Increased excretion rates of adrenaline and noradrenaline are associated with both underload and overload (stress) stimulation and emotional arousal (Frankenhaeuser, 1978). Other effects of the increased catecholamines levels, as part of sympathetic nervous responses, are increased heart rate and blood pressure. Increased heart rate and blood pressure have been observed in persons performing a computer task (Muter, Furedy, Vincent, & Pelcowitz, 1993). Other research has shown that there is increased skin conductance level (SCL) while performing a computer task (Muter, et al., 1993). Skin conductance level is an indicator of increased sympathetic nervous reaction (the more you sweat the better the conductance). Another indirect indicator of being "stressed" by computer use, is an increased jaw muscle electromyograph (like clenching your teeth an index of the user's 'anger') while performing a computer task (Emurian, 1991;1993).

This brief account suggests that using computers and dealing with computer technology may in principle cause stress reactions in individuals as evidenced by physiological changes.

*Psychological stress--

Although many can identify possible physical stress reactions, stress for many persons is a "state of mind". Next we will consider psychological stress perspectives. Richard Lazarus (1966) in his book *Psychological Stress and the Coping Process* has focused on the cognitive processes of evaluation of

stimuli (stressors) from the environment and the selection of appropriate responses (coping) based on this evaluation.

Lazarus and Folkman (1984) have defined psychological stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well being."

Lazarus points out that people go through primary and secondary appraisal processes.

The primary appraisal process determines whether the environment is perceived as psychologically threatening, harmful, or challenging. This primary process will determine whether the environment is perceived as a stressor. The secondary appraisal process is a complex evaluative process in which a person considers resources available to cope with the primarily appraised stressor. The secondary appraisal process allows the person to select coping strategies to cope with the stressor. During the secondary appraisal process a person may not have the resources to cope, which would result in stress reactions such as somatization (physical/body complaints), and negative emotions (such as anger, fright, anxiety, shame, guilt, sadness, envy, jealousy and disgust).

*Technostress -- how to measure it

Considering the opening scenario, Brod's description of technostress, and the general background on the concept of stress, I would now like to discuss my research on technostress. When humans interact with computers there may be several potentially negative outcomes. Various terms have been employed to describe these outcomes: computer stress, computer anxiety, negative computer attitudes, computerphobia, and computer aversion. These terms have appeared in the research literature of human-computer interactions.

Are these terms describing different reactions? From a descriptive (ideographic) perspective they seem to describe the same symptoms that Brod described in his book. The systematic approach of research in psychology is to define what it is you are measuring, develop a way to measure it, and validate the measure by relating it to other types of similar reactions and differentiating it from dissimilar reactions. This is the systematic empirical approach.

In the early stages of my research on technostress, I tried to make a clear distinction between measuring stressors and stress reactions. My approach to measuring technostress has concentrated on measuring computer stressors and determining what relationship exists with potential stress reactions. My initial research efforts (Hudiburg, 1989a, 1989b) focused on the development of the Computer Technology Hassles Scale. The scale was modeled after Richard Lazarus and his colleagues' Daily Hassles Scale. The Daily Hassles Scale measured stressors a person experienced using a checklist of 118 "daily hassles".

"[Daily] hassles are the irritating, frustrating, distressing demands that to some degree characterize the everyday transactions with the environment." Examples of "daily hassles" are: trouble relaxing, trouble making decisions, job dissatisfactions, etc. The level of stress assessed by the Daily Hassles Scale was empirically related (correlated) to somatic complaints (stress reactions) and health-related problems.

Since my research focused on transactions within a computer technology environment, I compiled a list of "computer hassles" "using instances of contact with common computer technology, use of computers, computer-generated information, and the impact of computers on society" (Hudiburg, 1989a, p. 768). Using the computer hassles, I developed two research scales: the Computer Technology Hassles Scale and the Computer Hassles Scale. The Computer Hassles Scale is a shortened version of the first scale and is composed of only "computer hassles" that might result from

actual use of microcomputers or mainframe computers. This is the scale you completed at the beginning of this talk.

The Computer Hassles Scale yields three scores, a total severity of hassles score, and two scores on the subscales: Computer Runtime Problems and Computer Information Problems. Based on a normative sample of 1199 college student computer users (Hudiburg, 1995), the following were the eight most frequently endorsed hassles from each of the subscales:

Computer Runtime Problems hassles:

#10 slow program speed (61.6%),
#11 slow computer speed (60.8%),

#1 computer system is down (54.1%),
#2 lost in the computer (46.0%),

#6 programming errors (45.1%),
#7 illegal input message (44.2%)

#9 poor user/computer interface (44.1%)
#3 poorly documented software (43.5%)

Computer Information Problems hassles:

#34 lack of computer expertise (68.3%),
#25 need to learn new software (65.6%),

#24 keyboard typing errors (63.1%),
#33 lack of help with a computer problem (60.1%)

#23 need to update skills (59.5%)
#16 increased time demands (55.8%)

#35 increased computer use expectations(53.6%)
#14 incomprehensible computer instructions(48.7%)

The three severity of hassles scores from the Computer Hassles Scale have been shown to correlate with reports of somatic complaints and anxiety reactions (e.g., headaches, nausea or upset stomach, trembling, feeling fearful, feeling pushed to get things done). Therefore, those who report high severity of hassles tend to report high levels of somatic complaints and anxiety reactions. It might be concluded that the person is experiencing a high level of technostress.

The Computer Information Problems hassles gives some indications of those who might experience technostress, from the point of view of a librarian.

The use of the Computer Hassles Scale is but one of the ways to identify a person who is experiencing technostress. It has the advantage of being objectively derived and objectively measured. Many persons who experience stress are reflecting on their personal experience and may have little use for an objectively derived measure. The benefits of using the Computer Hassles Scale is that a collective assessment of technostress could be determined for an individual or group. My research focuses on the experiences of the individual dealing with computer technology and does not focus on issues related to occupational or job stress. Detailed treatment of that topic is beyond the scope of this talk but I will

mention some brief points.

The research literature has identified many potential "job stressors" that can contribute to occupational stress. One way to characterize occupational stress is as the result of a lack of fit between the person and his or her work environment. One way to portray this lack of fit is in job role problems: role overload, role insufficiency, role ambiguity, and role conflict. Role overload is when job demands get too great the person feels he or she has too much to do and too little time. For example, new equipment, new software, and new information sources (the Internet) place increased work demands on the librarian and time constraints might not allow for proper implementation. Role insufficiency occurs when the person feels the lack of training, education, skills or experience to accomplish the job. This might occur when person is asked to learn a new computer system or CD-ROM software that has been purchased from a vendor who does not provide training, but the price was right! Role ambiguity occurs when the person does not know clearly what the priorities of the organization are and what is generally expected of him or her. This could occur, especially in the university setting, when the administration of the university views a library as just a place to hold books! Role conflict is the classic "damned if you do, damned if you don't" dilemma. As a librarian you have the role demanded by your patrons and your supervisors. The patrons might expect "librarians should know everything" about information sources while the supervisor knows staff limitations and seeks new personnel.

*Negative effects of technostress and coping

Most persons might experience mild forms of technostress but for those who experience extreme levels of technostress there may be some dire negative effects. Extreme stress may result in health related problems, like cardiac problems, hypertension, migraine headaches, etc., A possible negative outcome is "job burnout". Job burnout has been defined as "...a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who do 'people work' of some kind" (Maslach, 1982). There are many symptoms that characterize job burnout. For example, the person may feel emotionally drained, be unable to "express a sense of humor; they might skip rest periods and food breaks, and they may report increased physical complaints". The burned out worker may began pulling away from co-workers, and he/she might adopt an "I-don't-give-a-damn" attitude which may be associated with decreased job performance. The worker may experience increased frustration, low self-esteem, and have the "trapped" feeling.

If one determines that a person or group of people are experiencing a high level of technostress, the next step would be to determine how to cope with the technostress.

*DEALING WITH TECHNOSTRESS

*Coping strategies

In Richard Lazarus' psychological theory of stress, people are appraising potential stressors. The appraisal process includes primary and secondary appraisal. The secondary appraisal process will determine whether the person has the necessary resources to cope with the primarily appraised stressor. Coping is the process of managing external and internal demands that are perceived as taxing or exceeding a person's resources.

Coping may consist of behavior or cognitive responses that are designed to reduce, overcome, or tolerate the demands placed on the individual, known as coping strategies. Coping strategies have been classified into two major categories: emotion-focused strategies and problem-focused strategies.

According to Monat and Lazarus (1991) "Problem-focused coping refers to efforts to improve the troubled person-environment relationship by changing things, for example, by seeking information

about what to do, by holding back from impulsive and premature actions, and by confronting the person or persons responsible for one's difficulty.

Emotion-focused (or palliative) coping refers to thoughts or actions whose goal is to relieve the emotional impact of stress. These are apt to be mainly palliative in the sense that such strategies of coping do not actually alter the threatening or damaging conditions but make the person feel better. Examples are avoiding thinking about the trouble, denying that anything is wrong, distancing or detaching oneself as in joking about what makes one feel distressed, or taking tranquilizers or attempting to relax." (Monat & Lazarus, 1991, p. 6)

Problem-focused coping strategies have sometimes been referred to as direct approaches, while emotion-focused coping strategies are indirect approaches. Another issue concerns the general effectiveness of these two general types of coping strategies. This is a difficult question to answer, since what may be an optimal strategy is highly dependent upon the individual's situation and perception. Generally, emotion-focused strategies have been viewed as maladaptive (and less effective) when they prevent essential direct actions (problem-focused). Conversely, emotion-focused strategies maybe useful in maintaining psychological well being when conditions precipitate possible psychological disintegration.

Let me introduce a second scenario, applicable to librarians, and discuss some coping strategies for dealing with the technostress revealed. First, the stressors will be identified and possible coping strategies will be suggested.

Scenario #2 (this scenario was provided by Mimi King, Univ. of Toledo Library)

You have been at the reference desk going on twenty years. You are proud that you helped shape the original online catalog system. It was an integrated system giving you all the access points and data you needed for both searching and for managing the collection. True, after you had used it a while you had ideas on ways to make it more "friendly" to your patrons; still, you designed it and knew its ins and outs. But, after the renovation (jack hammers etc.), the vendor for the original system announced they were getting out of that line and would not support that system any longer. Within 6 months, your library had to install another system (from another vendor). That new system was a collection of components, not all of them working just yet--"but any day now." All the folks you had so carefully trained on the old system see no redeeming value to the new system, though you see that it is magnitudes more powerful than the old one. The CD-ROMs you had carefully selected to have the same search platform first became available on the LAN right then as well. You've gotten several new CD's by popular demand, but they have all different command structures and little or no documentation--the online "help" screens only help you know who's to blame for the thing. Now your original terminals, dumb and dating circa 1980-something, are being replaced by Pentiums. There are now several "icons" for your patrons--excuse me--users (sounds sort of dysfunctional, doesn't it?) to select:

(1) one for a vastly augmented online catalog (with attached periodical indexes and your holdings linked to the journals--so that the old question "but you don't have this, do you?" is now automatically answered, but users never seem to know how to find this information on the screen);

(2) one for the off-site vendor who's giving you a "deal," free access until just before all the student papers are due;

(3) one for some (not all) of the CD-ROM's from your LAN (some of the faculty think it's for political reasons);

(4) one for Netscape (version 1.2, 2.0, 3.0 or futureware)--you have used Yahoo pretty well and have

tried some of the web search engines, but you don't want to have to patrol the equipment to bounce users of various ages who just happen to find pornography on the Web...; and finally,

(5) an icon for the nifty little notepad which allows downloading instead of printing--which is getting mixed reviews from your users who want to know why the Mac version isn't available and why there are no printers attached.

The automation staff have to wait until everyone is off the system to back it up. They said "hopefully, the server won't die or you'll be in a world of hurt." The server locks up--has it crashed or is this just "a networking problem?"

All in all it's been a pretty busy two years, but this morning at the department heads meeting the director broke the news that you need to begin planning for the shift into the new online system which is imminent--the only stumbling block is they don't yet know which system it will be. But it will be here in the next biennium and you'll be ready with handouts and guides to it the week after they tell you--that's the day after it's installed...

**Analysis of scenario #2

The perspective of "technostressors" is from the librarian. The first "technostressors" are outdated computer skills or software, the switch from off-site "librarian mediated" online databases to on-site "user mediated" online and CD-ROM based databases. This "technostressor" may have the effect that ones skills as a database searcher are less of a critical need to the function of the library (deskilled) (Bichteler, 1987; Champion, 1988; Kupersmith, 1992). The introduction of the CD-ROM database presents a new problem in that each system has different interfaces (e.g., DOS, Windows, proprietary) and may employ different search protocols (Stone, 1993). The new CD-ROM systems come with little or no documentation except internally based documentation --like an F1 help screen or hypertext help menu.

Another "technostressor" is the outdated computer equipment. The old 286 base IBM-AT systems have been replaced by 486 or Pentium systems and the double speed CD-ROMS with 4X, 6X, 8X or 10X speed CD-ROMs. There is an increment of speed with each new hardware upgrade. Computer users seem to want computers to run faster and faster (note the two most common computer hassles were "slow program speed" and "slow computer speed"). Institutions are slow to discard old computer equipment or get new faster computers due to the cost of the equipment and the fact that some computers will run and run (I had an old IBM-XT clone machine that I gave to a niece who uses it to write papers for college).

Integrating the CD-ROMs as part of a larger LAN makes them less dependent on one dedicated computer or smaller single purpose LANs. Being part of a larger "network" system increases the chances that the "technostressor" of the "computer system is down" when the network server has crashed or needs a "system upgrade" will occur. You now might be expected to know more about networks than you expected before. Microcomputers were probably easier to understand as a single machine that could be turned on and off and booted up with the single machine dedicated software.

The Internet is probably becoming the numero uno "technostressor". The Internet is a massively available off-site source of information. A concern with the Internet is how to find the information; since there is a proliferation of Web search tools (Lycos, Infoseek, Altavista, Webcrawler, just to name a few) and graphic browsers to use. The Internet seems to add hundreds of new information sites daily with no standard to how they are designed maintained and updated. Dealing with the "information overload" (Kupersmith, 1992) is a real problem. Learning the nuances of the graphic and text based Internet browsers presents its challenges (Gaff, 1994). Now users have to learn what to download and

to save to those "floppies" due to limitations of hard disk space and the cost of paper; not to mention what they can and cannot email to themselves and others.

Planning for change when it will come is a common technostressor portrayed by the announcement a new online system will be implemented but which one is not known. When the system is installed and up and running, you are expected to "know" how to use and teach everything about the new technology already (Moreland, 1993).

*Coping with these technostressors

There are four excellent articles written on how to deal or cope with "Technostress" from a librarian's perspective. Sandra Champion's 1988 article "Technostress: Technology's Toll"; John Kupersmith's 1992 article "Technostress and the reference librarian"; Steven Stone's 1993 article "Technostress: taking some steps to cope" and Katie Clark and Sally Kalin's "Technostressed Out? How to cope in the digital age: that appeared in the August 1996 issue of *Library Journal*. These writers suggest several "coping" strategies in dealing with "technostress". I would like to relate what they have to say with the Richard Lazarus' framework of problem-focused and emotion-focused coping strategies.

The first and foremost way to cope is through education and training (a problem-focused coping strategy). Educating oneself to new developments is an ongoing process. Part of the educating process is accepting the fact that computer technology will always be changing, with some periods of slower change than others. Not resisting change (Champion, 1988; Clark & Kalin, 1996; Hanson, 1994; Malinconico, 1991) is important, because resistance is more emotion-focused and less effective in reducing the stressor. One of the problems in using training and education is the element of time, there never is enough of it. The training methods used for the staff, which in turn will provide training to users, might have to be individualized (Moreland, 1993).

*When coping doesn't work and you become "stressed out"

People may judge for themselves that they cannot cope and are "stressed out". This could be indicative of feeling "helpless" in the face of stressors or they might report high levels of somatic complaints (body/physical) and anxiety. These typical stress reactions would indicate the person is "stressed out". The person is unable to cope with the "technostressors" on his/her own volition and needs assistance in learning coping strategies. To put it another way, the person is judged unable to change the way he or she perceives and manages his or her interactions with the immediate environment. At this stage of dealing with "technostress" a person might need to employ one of several stress management techniques.

Ethel Roskies suggests that "stress has become the fashionable disease of our time, and the treatment of stress is a popular and profitable activity." (Roskies, 1991; p. 411) There are several types of stress management used today. They may be placed in the following broad categories (adapted from Monat & Lazarus, 1991):

Environment/Lifestyle: time management, proper nutrition, exercise, finding alternatives to frustrated goals, stopping bad habit (smoking, drinking, excessive eating, etc.)

Personality/Perception: assertiveness training, thought stopping, refuting irrational ideas, stress inoculation, modifying type A behavior

Biological responses: progressive relaxation, relaxation response, meditation, breathing exercises, biofeedback, autogenics

*Stress-management techniques

As you can see there are many techniques that could be used to manage stress with varying claims of effectiveness, of which very few have been empirically documented. It is important to note that a single technique might not be effective for everyone and one technique can be combined with another. An important issue related to stress management is whether one should utilize an individual intervention or an organizational stress-management intervention (Everly, 1989). My presentation focuses on "individual" interventions which could be used concurrently in an organizational stress management program. My presentation only scratches the surface in this growing field. For further interest in stress management techniques, books like Jerrold S. Greenberg's (1990) *Comprehensive Stress Management*, 3rd edition or George S. Everly, Jr.'s (1989) *A Clinical Guide to the Treatment of the Human Stress Response* are useful sources of information. Let us look at two stress management techniques. Kuppersmith (1992) mentioned several of these techniques in his article on technostress for reference librarians.

1. Stress Inoculation-

Donald Meichenbaum (1977) developed the stress-management technique called stress inoculation training (SIT). Stress inoculation is a three stage process:

1) education 2) rehearsal and 3) application.

During the first stage (education) the person is given a framework for understanding her or his response to stressful events. During this phase data is collected by the individual; these data could be collected in the form of a diary as suggested by Greenberg (1990). The person should pay more attention to the "internal dialogue" that accompanies responses to stressors. This will hopefully "educate" people by making them more aware of their responses to stress.

During second stage (rehearsal), the person learns how to make cognitive self-statements as a form of coping and problem solving skills. Examples of coping self-statements can be placed into the following categories with sample self-statements (from Greenberg, 1990):

Preparing for a stressor--You can develop a plan to deal with it;

Confronting and handling a stressor--One step at a time: You can handle the situation;

Coping with the feeling of being overwhelmed--Keep the focus on the present; what is it you have to do?;

Reinforcing self-statements--It worked; you did it!

**Other skills can be taught during this stage as well to enhance the stress management.

The third stage (application) has the individual use the information and skills learned during the first two stages (education and rehearsal) in actual stressful situations. It is appropriate to evaluate the use of the skills in low stress situations and then move on to higher stress situations. During the evaluation of these new skills, changes can be made so the person can develop a set of self-statements to effectively respond to most stressful situations.

Stress inoculation training has been shown to be an effective stress management technique in a variety of circumstances (e.g., control of anger, test anxiety, phobias, pain, etc.) and could be effective in treating technostress.

2. Relaxation Response-

One component of the stress response is the increased arousal of the individual. This is evident in physical changes in: heart rate, blood pressure, the central nervous system, the autonomic nervous system, and the endocrine system. It is also evident in the psychological (cognitive) changes experienced by the individual; increased awareness of being "stressed". The opposite of arousal or hyperarousal is elicitation of the "relaxation response". The elicitation of the relaxation response in the presence of a stressor has been shown to be an effective treatment. "The relaxation response is perhaps best understood as a psycho-physiological state of hypoarousal engendered by a multitude of diverse technologies (e.g., meditation, neuromuscular relaxation)" (Everly, 1989, p. 149). Thus, one could think of being relaxed as quite opposite from being stressed and that the two states have different psychological and physiological mediators. As suggested there are a variety of techniques [technologies] that can engender the relaxation response. No one such technique would be effective for everyone.

One of the techniques used to induce the relaxation response is meditation. Briefly, meditation is "...a mental exercise that affects body processes... The purpose of meditation is to gain control over your attention so that you can choose what to focus upon rather than being subject to the unpredictable ebb and flow of environmental circumstances" (Greenberg, 1990, p. 157).

Neuromuscular relaxation, known as progressive relaxation, was developed by Dr. Edmund Jacobson in the 1930s. Using this technique the person learns to progressively relax selected muscles by first tensing then relaxing the muscles. The progressive relaxation could concentrate on the whole body or one part of the body. The therapeutic effect of this technique is the person's learned awareness of the difference between tense muscles and relaxed muscles. Neuromuscular relaxation has been shown to be effective in treating a variety of stress-related reactions: insomnia, tension headaches, subjective reports of anxiety, general autonomic arousal, and development of a calmer attitude to possibly combat excessive stress arousal (McGuigan, Sime, & Wallace, 1984).

*TECHNOSTRESS AND THE FUTURE

I found this poem on the Internet while searching for material to support this talk. It presents a gloomy picture of technostress...

"Technostress Overload Syndrome, even in my sleep I moan. Like a rising tide, a drowning man lying in the foam. Information piling up around me in my home, the network news an endless drone.

Technostress Overload Syndrome, I looked around my room. All of the headlines were preaching gloom and doom. All of the stations were spreading fear of whom, might unleash the next disaster, boom.

Technostress Overload Syndrome, I even get it on the phone. It comes in bits and bytes, over the dial tone, a flood of information till I just zone, have to hang it up and be alone."

Byronandonandondandon

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<http://www.intac.com/~bshafer/technostress.html> (this was the link but it is dead now 10/20/99)

I don't share this view of technostress, but there is a final question as to whether technostress is a passing problem or a continuous future concern. Will future generations of librarians and others

experience less technostress because they have grown up during the computer and information age? In one way there will be less technostress because technologies will be increasingly available and there will be ample opportunities for providers and users to become familiar with them. In another way there will always be the problem of information overload with increasing availability of information sources and ways to access the source, as well as continuous and ever swifter upgrades, enhancements, and totally new hardware and software. How to limit one's search of the information will become the primary source of future "technostress". Using query language on CD-ROMs might yield ten to a hundred sources but using the Internet might yield hundreds to thousands of such information sources. Technostress is here to stay but we will continue to develop effective ways to cope.

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