

Application of Demand-Control Theory to Sign Language Interpreting: Implications for Stress and Interpreter Training

Robyn K. Dean

Robert Q Pollard, Jr.

University of Rochester School of Medicine

The translation work of sign language interpreters involves much more than language. The characteristics and goings-on in the physical environment, the dynamics and interactions between the people who are present, and even the "inner noise" of the interpreter contribute to the accuracy, or lack thereof, of the resulting translation. The competent interpreter must understand and respond appropriately to the language and nonlanguage aspects of each interpreting assignment. We use the framework of *demand-control* theory (Karasek, 1979) to examine the complex occupation of sign language interpreting. Demand-control theory is a job analysis method useful in studies of occupational stress and reduction of stress-related illness, injury, and burnout. We describe sources of demand in the interpreting profession, including demands that arise from factors other than those associated with languages (*linguistic demands*). These include *environmental*, *interpersonal*, and *intrapersonal* demands. Karasek's concept of control, or *decision latitude*, is also explored in relation to the interpreting profession. We discuss the prevalence of cumulative trauma disorders (CTD), turnover, and burnout in the interpreting profession in light of demand-control theory and data from interpreter surveys, including a new survey study described herein. We conclude that nonlinguistic demand factors in particular and perceived restrictions in decision latitude likely contribute to stress, CTD, burnout, and the resulting shortage of sign language interpreters. We make suggestions for improvements in interpreter education and professional development, including the institution of an advanced, supervised professional training period, modeled after internships common in other high demand professional occupations.

Correspondence should be sent to Robyn K. Dean, University of Rochester Medical Center, Box 650, Rochester, NY 14642 (e-mail: Robyn_Dean@urmc.rochester.edu).

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"I'm taking a mental health day." Most people are familiar with this colloquial sentence and its implication about the impact of stress on work productivity. It is significant that such commentary (and behavior) originates from employees, not employers. However, taking a brief respite from work to recover from stress is not a sanctioned reason for absenteeism in most settings. Yet the common need to do so has resulted in this vernacular and, arguably, some normalization or social acceptance of this phenomenon. It also suggests a lack of effective or acceptable coping mechanisms available to employees to reduce the negative consequences of stress.

Researchers and theorists in the field of occupational health have been educating employers and employees about workplace stress for decades. Studies show occupational stress is linked to injury, disease, absenteeism, and low productivity (Karasek, 1979; Karasek & Theorell, 1990; Schnall & Landsbergis, 1994; Theorell & Karasek, 1996), including in the interpreting profession (DeCaro, Feurerstein, & Hurwitz, 1992; Heller, Stansfield, Stark, & Langholtz, 1986; Watson, 1987). Although there has been interest from the business sector in reducing employee stress, the interventions considered are typically limited to changes in the physical environment or promoting change in employee behaviors. Examples of the former include the installation of noise reduction barriers, ergonomic seating and keyboards, glare-reducing lights or filters for computer screens, and greater open space in office buildings. Examples of employee-focused interventions

include "brown-bag" seminars on nutrition and stress reduction, discounted memberships to health clubs, and on-site exercise and child-care facilities.

Although these environmental and employee-focused interventions may contribute to the reduction of stress, their impact is limited by the frequent assumption that stress in the work environment is inevitable and therefore must be "coped with" rather than reduced, changed, or eliminated (Karasek & Theorell, 1990). Their impact is also limited because such interventions treat the individual and the work environment as distinct entities, either of which can be acted upon separately. This type of compartmentalization of the problem precludes consideration of an entirely different class of stress interventions, those that reflect an *interactional* viewpoint wherein the individual and the work environment are considered simultaneously both in the definition of the problem and consideration of effective stress interventions.

An Interactive Theory of Occupational Stress

Robert Karasek (1979), frequently collaborating with Töres Theorell, has developed a theory of occupational stress, termed the *demand-control* model, based on an interactive consideration of workers and their employment environments. The model posits two phenomenological dimensions that affect workers in a given setting or situation. These dimensions are termed *demand* and *control*, and the "strength" of each dimension ranges from low to high.

Unlike popular views of workplace stress, Karasek and Theorell's model rejects the assumption that occupational stress is inevitable. In fact, they reject the term *stress* as too simple to capture the nature and complexity of the range of employee-job interactive experiences the model envisions. As shown in Figure 1, the demand and control dimensions yield a four-quadrant occupational environment wherein the resulting experience employees will have can vary widely. The term *demand* refers to the requirements of a job, which may include aspects of the environment, the actual task being performed, and other factors that "act upon" the individual. The term *control* refers to the degree to which the individual has the power to "act upon" the demands presented by the job, perhaps by making decisions, bringing skills or resources to bear on the task, or alter-

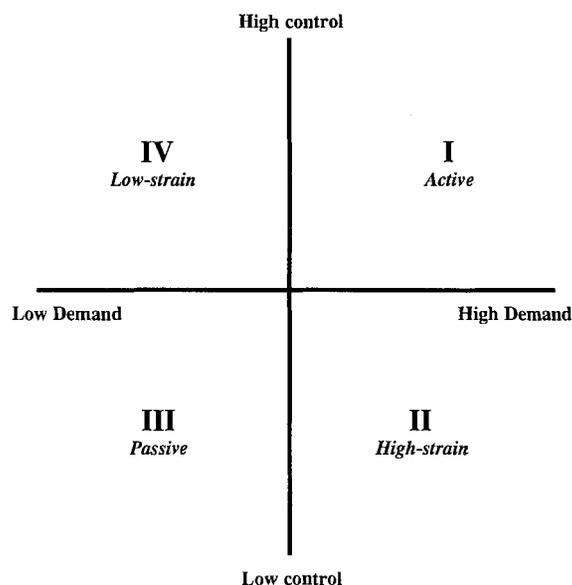


Figure 1 Interactive dimensions of demand-control theory. Reprinted from "Job demands, job decision latitude, and mental strain: Implications for job redesign" by R. A. Karasek, published in *Administrative Science Quarterly* (1979), 24: 288 by permission of *Administrative Science Quarterly*. Copyright 1979 by Cornell University. Adapted with permission.

ing the environment or other aspects of the task demand. Job demands themselves are not necessarily "bad" nor do they inevitably lead to stress. The impact of occupational demands in light of the control resources available to the individual is the key to predicting job stress or job satisfaction.

For example, emergency room nursing certainly is a job with high demand but it may bring great joy and perceived value to a well-trained nurse who can adequately respond to the demands she or he faces on the job. Demand-control research suggests that individuals in high demand, high control occupations do not experience problematic degrees of stress (especially over the long term), and they experience lower incidences of stress-related illness and absenteeism than persons in high demand, low control occupations (Karasek, 1979; Karasek & Theorell, 1990, Theorell & Karasek, 1996). Therefore, stress is not an inevitable outcome of a high demand job. As indicated in quadrant I of the figure, when increasing job demands are adequately balanced with higher degrees of control, Karasek and Theorell refer to the work situation as *active* and suggest that learning is the primary outcome or experience of the

individual. Most professional occupations would fall within quadrant I, presuming the individual has a normal degree of access to the control resources common in that profession. Occupational research suggests that job satisfaction is highest when demand and control are both high in the work environment (Karasek, 1979; Karasek & Theorell, 1990, Theorell & Karasek, 1996).

The general public's perception of stress is most similar to quadrant II in the demand-control theory figure. Here, a job environment presents a high degree or number of demands. But in this case, the individual's control over those demands is limited. Perhaps a general has insufficient troops, supplies, or information to carry out a mission, a factory worker has little control over the pace of the assembly line or assembly tasks or inventory quality, or an inadequately trained or inexperienced person nevertheless has the responsibility to lead a major project. The term Karasek and Theorell prefer for characterizing this work experience is *high-strain*. They avoid the term *stress* because other undesirable combinations of demand and control are stressful (in the lay sense of the word) but arise from different dynamics of the individual-job interaction.

Quadrant IV portrays a combination of demand and control that some may find quite unpleasant and stressful. Here, an individual has many skills, resources, or opportunities to respond to the demands presented in his or her job but the work does not present many demands. The individual's control resources are underutilized. Whereas some may find this situation relaxing, others may react negatively, by feeling bored or unfulfilled or underappreciated in a low demand job. The crew of an aircraft carrier on a routine domestic patrol mission is in a high control, low demand situation. So is a college professor proctoring a final exam or even teaching an introductory level course if she has done so for many years. Some consultants or CEOs specialize in working for floundering companies. After successfully leading a company to efficiency and profitability (i.e., effectively shifting their work situation from quadrant I to quadrant IV), this type of individual often prefers to leave his or her position and seek more challenging work elsewhere than stay in an environment where the demands have diminished. Karasek and Theorell refer to quadrant IV employment situations as *low-strain*. Depending on "personality" or occupational goals, a worker may or may

not perceive these situations as stressful or unsatisfactory, but there clearly is a mismatch between the job's limited demands and the control resources of the individual.

Finally, quadrant III includes work situations in which the demands of the job and the control available to the worker are both limited. There is not the imbalance that exists in quadrants II and IV, which are the more stress-inducing work environments. Instead, there is a greater degree of balance, as in quadrant I, but in this case, both demands and control are low. Examples of low demand, low control situations would include assembling fast-food hamburgers at a restaurant that is rarely busy, or monitoring a security camera and responding to a problem by calling the police. These are *passive* work environments, according to the theory, which are not particularly stressful but do not result in learning (as opposed to quadrant I).

Interpreters and Stress

Before an analysis of the profession of sign language interpreting in light of demand-control theory is presented, a review of the existing literature on interpreter stress is warranted. Several interview and survey-based studies of job satisfaction, stress, and burnout in the interpreting field have been reported (Branam, 1991; Heller et al., 1986; Neville, 1992; Swartz, 1999; Watson, 1987). Some describe findings of high burnout rates among interpreters (Watson, 1987) whereas others do not (Neville, 1992). All indicate multiple factors associated with job satisfaction, stress, and burnout, but interpreter reports of inadequate training for the realities of the working world and frustration with the lack of professional support available after graduation are particularly emphasized in these studies.

Clearly, numerous occupational demands affect the overall translation task that may contribute to interpreter stress and burnout. The static, restrictive nature of the interpreter's role ("role strain") was cited by Heller et al. (1986) as a primary factor causing stress, according to their survey data. This strain arose from a variety of factors, including working conditions, unattainably high performance expectations, conflicting views among consumers' understanding of the interpreter's role, emotional reactions and duress with no outlet for dealing with them, involvement in private

and sensitive situations, limited ability to help consumers other than through the direct translational role, and real or perceived skill inadequacies (the most commonly cited source of stress). Branam's survey (1991; cited in Neville, 1992, pp. 10–11) found that hostility expressed toward interpreters by some consumers was a primary reason for burnout. Harvey and Gunther (1994) discuss the vicarious stress that interpreters experience when working in situations that involve unfair treatment or prejudice affecting deaf people. Heller et al. (1986) note that some interpreters perceived that merely having emotional reactions to their work was unprofessional and even a violation of their code of ethics.

In the interpreting profession, attention also has focused on the high incidence of cumulative trauma disorders (CTD) such as carpal-tunnel syndrome, tendinitis, and bursitis (DeCaro et al., 1992; National Technical Institute for the Deaf [NTID], no date; Norris, 1996; Peper & Gibney, 1999; Registry of Interpreters for the Deaf [RID], 1997; Sanderson, 1987; Stedt, 1992). The pain and dysfunction associated with CTD have led to significant loss of work time for many interpreters and forced some to abandon the profession entirely, in part contributing to the national shortage of sign language interpreters (Jackman, 1999; Matthews, 1994; Sanderson, 1987). Whereas some authors link only physical types of stress to CTD among interpreters (e.g., muscle fatigue, impact, cold environments), others also focus on the contribution of psychological stress to CTD (NTID, no date; Sanderson, 1987). However, as with most approaches to reducing occupational stress and injury in the business sector, the major emphasis on CTD prevention in the interpreting literature has been on interventions focused on the interpreter herself or himself or changes to the work environment. Advice on CTD prevention (e.g., NTID, no date; RID, 1997; Sanderson, 1987) focuses primarily on stretching and strengthening exercises, proper positioning of the hands during signing and rest, and other somatic practices, and on environmental interventions such as ergonomic seating, lumbar support, and comfortable room temperature. Although some CTD prevention literature recommends psychological interventions, such as self-exploration or self-assessment, constructive thinking, reflection, venting, prayer, (NTID, no date, Section 5, pp. 8, 9, 21), guided imag-

ery, and meditation (Sanderson, 1987, p. 75), these interventions are still typically short-term ones focused on the interpreter, not the interaction between interpreters and the demands of their work; they seem to presume that stress is an inevitable aspect of the occupation.

Conceptualizing Demands in the Interpreting Profession

Applying demand-control theory to the profession of sign language interpreting poses several challenges. The first is identifying demands that interpreters face. On the surface, the ultimate task of the occupation is to facilitate accurate translation between a signed and a spoken language. However, this task is composed of, and influenced by, a great number of different types of demands. The first category of demands includes those directly or indirectly related to language. We will refer to this as the *linguistic demand* category. Many linguistic factors ultimately influence the task of translation. They include the language fluency of the parties involved in the communication exchange, their clarity in articulation or signing, the interpreter's own knowledge and fluency in each language, and more. Yet, upon further analysis, and as suggested in the preceding review of interpreter stress literature, factors other than linguistic ones also affect the work of interpreters and, arguably, the translations that are the product of that work. We group these nonlinguistic factors into three additional demand categories. They include *environmental demand*, factors related to the setting in which the interpreting assignment takes place; the *interpersonal demand*, factors related to the interaction of individuals participating in the communication process (who are often from different sociolinguistic and cultural backgrounds), as well as other parties who may be present in the environment; and the *intrapersonal demand*, physical and psychological factors pertaining to the interpreter alone. These four demand categories, and examples of specific demands within each category, are shown in Table 1.

A second challenge in applying demand-control theory to the interpreting profession is the importance of recognizing the simultaneous contribution of demands from each of these four categories to the overall degree of demand the interpreter experiences during a

Table 1 Categories and examples of demand sources in sign language interpreting assignments

Type of demand	Sources
Linguistic	Clients' communication modalities Clients' linguistic fluency Clients' communication speed Clients' communication clarity Voice volume; signing space Interpreter's receptive skills Interpreter's expressive skills Use of technical vocabulary
Environmental	General nature of assignment Specific setting of assignment Sight lines Background noise Room temperature Chemicals and odors Seating arrangements Lighting quality Visual distractions
Interpersonal	Parties' understanding of the interpreter's role Parties' adherence to expected role norms Communication directed to the interpreter Power and authority dynamics Oppression, dishonesty, unfairness, etc. Communication control, e.g., turn-taking
Intrapersonal	Dynamic nature and intensity of event Vicarious reactions Safety concerns Physiological responses and distractions Doubts or questions about performance Availability of supervision and support Anonymity and isolation No legal cloak of confidentiality Liability concerns

given assignment. These varied and simultaneous demands build on and even influence one another, making it necessary to view a given interpreting situation from all four demand perspectives before concluding where the assignment ultimately falls on the demand continuum. (Whether or not a given interpreting assignment is *stressful* must further await a consideration of the control resources available to the interpreter, in this theoretical framework. This will be addressed below.)

Interpreting in court is often considered among the most difficult of assignments. Yet the presumption that

courtroom interpreting is always stressful, or even high demand, would not be accurate. Consider a situation wherein the presiding judge and attorneys understand the uniqueness of American Sign Language (ASL) and Deaf culture, the deaf consumer is well educated on his or her legal rights and responsibilities, both the hearing and deaf consumers' communication styles are easily understandable, and the legal situation at hand is not emotionally taxing, such as a business merger hearing. The overall demand of this assignment is not as high as might have been first presumed, and interpreters competent with legal vocabulary (one aspect of the interpreter's control) would not be expected to find the assignment stressful. In contrast, consider an assignment that might be presumed to be low demand: interpreting for a kindergarten class graduation attended by deaf parents. But in this case, the graduates sing an unintelligible series of songs that the interpreter was not told about previously, the deaf consumers' view of the interpreter is continually blocked by camcorder-toting parents, the deaf parents' child forgets the words to her solo and starts crying (which upsets everyone), and the parents ask the interpreter if she would hold their 3-month-old child while they comfort the crying kindergarten. A presumed low demand assignment has become a high demand nightmare and may well be a stressful one, depending in part on the interpreter's control resources.

A third challenge in applying demand-control theory to the interpreting profession is to appreciate the shift in demands that can occur between various interpreting assignments or even during the same assignment. The two previous situations may have been experienced by the same freelance interpreter on the same day. Or attentive kindergarten staff might have better controlled the parents with the cameras and dealt with the crying child themselves so as not to require the deaf parents' intervention. Conceptualizing one static level of demand for the occupation of sign language interpreting does not seem appropriate.

Whereas Karasek and Theorell typically discuss demand-control dynamics as if they are static in a given occupation, they acknowledge that these dynamics can shift if the situation changes. Some occupations may involve considerable variation in demand-control dynamics, with resulting variation in the impact on the individual, on a daily or even hourly basis. To appreci-

ate the sometimes shifting nature of demand-control dynamics, and the resulting occupational stress consequences of the demand-control balance, consider the experience of progressing through successively more difficult stages of a familiar video game. At the beginning, you have considerable resources at your disposal (your experience with the game, your knowledge of the few dangers awaiting you on the early levels, several "lives" in storage, a full cache of weapons or other assets needed for the challenge) and in these ways, you are in great control of the situation, though perhaps not very entertained. However, as you proceed to higher levels of the game, the dangers and difficulty level, the demands, increase steadily while your resources and abilities to respond to these increasing challenges, your control, steadily diminishes. Before long, the demand-control dynamics have shifted your experience from the leisurely, confident environment portrayed in quadrant IV of Figure 1, to the ineffective, overwhelmed experience portrayed in quadrant II. But you keep playing the game because there is an exhilarating period when there is a balance between demand and control that is high enough (quadrant I) for you to find the experience pleasurable and that stimulates growth of your knowledge and skill at the game.

Control and the Interpreting Profession

As noted, the positive or negative outcomes of a given occupational situation are not dictated by job demands alone but by the relation between demands and control. Karasek and Theorell's concept of control includes the skills and other resources a worker has to cope with the demands presented to him and especially his degree of authority and freedom to exercise decisions about which skills and resources to employ and how to do so. Karasek and others have shown that providing workers with increased job control decreases rates of illness and absenteeism (Karasek, 1990, 1992). The two components of job control, skills/resources and decision authority, are combined in the concept of *decision latitude*, which Karasek and Theorell use as a synonym for control.

In many work settings, decision latitude is determined by the responsibilities and resources assigned to a particular job position (e.g., regional manager for

sales in New England with a certain budget and staff for the year) and by policies and procedures set by one's supervisor or other elements of the organizational structure. In a profession, however, decision latitude is largely determined by one's education and experience, the freedoms attributed to that professional role by society, and by the profession's code of ethics and standards of conduct. The decision latitude that can be exercised by a physician or attorney is related more to education and professional standards than workplace *per se*. Hospitals allow doctors to practice within their area of competence and according to the ethical and behavioral standards of the American Medical Association. Most professionals enjoy wide decision latitude in responding to the demands of their work. That is why professional occupations are typically experienced as pleasurable and stimulating, even though demands are often high, since the corresponding high degree of decision latitude (quadrant I of Figure 1) leads to the *active* type of job experience Karasek and Theorell cite as the most preferred and the one associated with less psychophysiological risk. Yet the profession of sign language interpreting is unique in that it has codified and otherwise incorporated in professional education and practice the importance of *not* exercising decision latitude, apart from that pertaining to the linguistic demands of translation work.

The code of ethics of the RID, the primary national association of sign language interpreters, contains provisions that can be viewed as directly or indirectly restricting decision latitude. The code of ethics contains eight tenets, one of which states that interpreters "shall not counsel, advise or interject personal opinions" (RID, 1994, p. 13). Another states that interpreters "shall keep all assignment-related information strictly confidential" (p. 12). Until recently, the code also included a set of explanatory guidelines following each tenet. Although the RID voted in 1995 (B. Hall, personal communication, April 10, 2000) to discontinue publication of the guidelines (leaving just the tenets of the code), their influence is still significant in the interpreting profession, as evidenced by the guidelines' continued appearance in important interpreting texts (e.g., Metzger, 1999). The most recent RID publications (Cartwright, 1999; RID, 1999) continue to portray the interpreter's decision latitude as severely restricted,

even in complex, professional, personal, and ethically challenging situations.

The confidentiality guideline states that "even seemingly unimportant information could be damaging in the wrong hands. Therefore, to avoid this possibility, [interpreters] must not say anything about any assignment" (RID, 1994, p. 12). Although confidentiality is an ethical tenet common to many professions, no specific provision is made in the RID code or its guidelines for discussion of one's professional performance and work experiences in a confidential supervisory relationship, unlike the code of ethics and conduct for psychologists, for example (American Psychological Association, 1992). Fritsch Rudser (1986) and Heller et al. (1986), have called for the interpreting profession to establish a confidential supervision mechanism and recommend that it specifically be described as permissible in the guidelines of the code of ethics. The former RID guidelines also advised that an interpreter's "only function is to facilitate communication" (p. 13), that "if [one's] feelings interfere with rendering the message accurately, he/she will withdraw from the situation" (p. 13), and that interpreters "are not editors and must transmit everything that is said in exactly the same way it was intended" (p. 13). How might these restrictions in decision latitude affect the occupational experiences of sign language interpreters, considering all four demand categories with which they must contend?

A speaker at a lecture cannot operate the slide projector correctly, presenting a problematic environmental demand. The interpreter, who is familiar with the equipment and could rectify the problem easily, recalls that her "only function is to facilitate communication" and does not offer to assist. The speaker abandons the projector and, frustrated and dislodged from his presentation plan, begins speaking in a faster and less organized manner, increasing the linguistic demand for the interpreter. An interpreter in a psychiatric emergency room is asked to translate for a deaf patient brought in under mental health arrest. The patient is acutely psychotic and his normally fluent sign language is grossly distorted just as hearing persons' language can be distorted by mental illness (Pollard, 1998a, 1998b). But the interpreter, believing that she "must transmit everything that is said in exactly the same way it was intended" is unable to provide the clinician with

a coherent translation. Instead, she guesses at what the patient might have meant and eventually withdraws from the situation, since she cannot "counsel, advise or interject personal opinions" even though she could, if she felt it were proper, explain in detail to the clinician how the patient's language was distorted from typical ASL and even how it differed from her prior experiences with that patient, but that, too, would be prohibited by the need to "keep all [previous] assignment-related information strictly confidential." Instead, the clinician is left ignorant of this vital information, which could hold direct bearing on diagnosis and treatment planning. Another interpreter works diligently to fulfill his "only function . . . to facilitate communication" between two parties when he spots a bee in a corner of the room. This distracting environmental demand reduces the quality of his translation work (Gerver, 1974). Moreover, since the interpreter is allergic to bee stings, a disruptive intrapersonal demand is engendered, as the interpreter's growing concern for his own safety further distracts him from the translation task at hand. A physician and patient agree that a prescription is needed for a certain ailment but, distracted by later conversation, no one but the interpreter recalls that the prescription has not been written by the time the appointment is over. She decides not to speak up, believing that would be out of role. A deaf consumer, attending a convention, asks the hotel concierge for directions to a certain restaurant. The interpreter on duty, familiar with the area, knows that the directions given are incorrect. But, based on her training, she conveys the inaccurate information rather than step out of role. A deaf psychiatric patient becomes increasingly volatile in a confrontive therapy session, scaring the interpreter, and even directs an angry outburst toward her as a function of his own psychological issues. The interpreter does not feel able to debrief or obtain support from anyone following this stressful assignment, for fear of violating her confidentiality oath. This prohibition was recently reiterated in a RID publication on mental health interpreting (RID, 1999).

Our intention in conveying these examples is not to critique the RID code of ethics or professional guidelines per se but to emphasize how the real or perceived lack of decision latitude in interpreting assignments can lead to significant stress in light of the four demand

categories we described. The decision latitude conveyed by the RID guidelines seems to leave interpreters with few options for responding to many of the demands presented in their occupation, especially those that arise from environmental, interpersonal, and intrapersonal factors. Traditionally, interpreters have been taught that thoughts, information, commentary, and feelings are to be suppressed, as well as all behavior not directly related to responding to the linguistic demands of the translation task. If this is not possible, then withdrawal from the situation is the only option. Even the opportunity to evaluate and perhaps improve one's ability to cope with these demands is curtailed by the apparent restriction on supervision and peer consultation, if such supervision risks disclosure of assignment-related information. Although divergence from these highly restrictive views is openly discussed at interpreter workshops and in some training programs, such views are still widespread in the interpreting profession (Cartwright, 1999; Heller et al., 1986; Metzger, 1999) and are further reflected in the language of the RID code of ethics, which has not been revised since 1980. In contrast, the code of ethics of the American Psychological Association (an organization over 100 years old) is still periodically revised in light of changing societal and professional trends, most recently, in 1979, 1982, and 1992.

It is no surprise that the aforementioned literature on occupational stress in the interpreting profession alludes to decision latitude restrictions as prominent causes of stress and burnout. Heller et al. (1986) specifically portray the restrictive nature of the interpreter role as stress-inducing. The lack of opportunity (decision latitude) to deal with the emotional impact of some interpreting assignments was also blamed as causing stress by Heller et al., as Harvey and Gunther (1994) also note. These and other studies of interpreter stress (Branam, 1991; Neville, 1992; Swartz, 1999; Watson, 1987) emphasize how current interpreter training and professional practice standards do not adequately address the actual challenges (demands) of the interpreting occupation or the negative consequences of interpreter isolation after formal training has ended. Interpreter training and professional development activities must address all four of the demand categories described here and reconsider the consequences of

such a restrictive view of decision latitude that appears to be prominent in the interpreting profession.

Demand, Control, and Interpreter Education

Theorell and Karasek (1996), in a review of the literature on demand-control theory and related occupational stress research, emphasize the long-term employment consequences of balanced versus unbalanced demand-control job dynamics. They conclude that "the active job situation, over a significant period of time, is associated with the development of a feeling of mastery that in turn inhibits the perception of job strain during periods of overload—thus reducing the psychophysiological impact of stressful situations at work . . . on the contrary, daily residual strain arising from a stressful work situation gives rise to accumulated feelings of exhaustion, which may inhibit learning attempts by leading to withdrawal from the learning challenges presented on the job" (p. 11). There are direct implications here pertaining to the national shortage of interpreters and the need for retention of skilled, experienced interpreting professionals. The present lack of decision latitude perceived by many interpreters and still codified in the RID code of ethics, and the lack of other control resources, including a formally sanctioned, confidential supervision mechanism and advanced practice training, is likely contributing to illness, injury (including CTD), high turnover, and burnout rates in the interpreting profession and, consequently, the national interpreter shortage (Jackman, 1999; Matthews, 1994; Sanderson, 1987). "Skilled interpreters seem to leave the field faster than [interpreter training programs] can train new ones" (Watson, 1987, p. 79). In a career as demanding as interpreting, a singular focus on recruiting new students, without addressing the educational, supervisory, and professional development needs of working interpreters, is like continually adding more water to a leaking bucket instead of attending to the broader aspect of the problem.

The acquisition of classroom-based interpreting knowledge and the ability to translate between sign language and spoken English does not complete the education of a sign language interpreter. Interpreters must integrate theory and basic translation skills with the

many challenges of professional practice including those arising from environmental, interpersonal, and intrapersonal demands. They must develop unique knowledge bases and other skills (beyond those pertaining to language *per se*) regarding the varied service settings where interpreters work and, most importantly, expand and hone their professional judgment skills. This is particularly important and challenging in services settings such as health care, mental health, the courts, and other complex environments where interpreters are increasingly in demand due to the accessibility mandates of the Americans with Disabilities Act (ADA; Cokely, 1982; DeMatteo, Veltri, & Lee, 1986; Hall, 1999; Harmer, 1999; Harvey, 1997; Pollard, 1996, 1998a, 1998b; Pollard & Smith, *in press*; Putsch, 1985; Shaw, 1996; Stansfield & Veltri, 1987; Veltri, 1993; Yafee, 1999; Young, 1985). Roy (1993) notes that interpreter training programs do not address the full range of interpreting demands but tend to focus on the "superficial aspects of the communication event which reinforce the notion that the interpreter's task is largely mechanical and that the interpreter's role in the event is passive" (p. 146).

The knowledge base and professional judgment skills needed to function effectively as a sign language interpreter, especially in these complex settings, are not so much taught as they are developed. Allowing these critical interpreter competencies to develop haphazardly, on-the-job, without supervision or mentorship, is an error of oversight that distinguishes the interpreting profession from many others that require extended internship periods. This oversight not only holds serious consequences for deaf and hearing consumers of interpreting services, it endangers the size and stability of the already insufficient interpreter resource pool by failing to attend to the retention and early professional development of graduates.

Observations and emerging research data suggest that most working interpreters hunger for supervision and professional development, often prioritizing these things higher than salary in a new job offer (Swartz, 1999). Theorell and Karasek (1996; Karasek & Theorell, 1990) have confirmed that such supports at work decrease occupational health risks. Swartz's study is one of the few empirical investigations that touches upon the relationship between interpreter job satisfac-

tion and advanced training and supervision. "Higher job satisfaction is positively correlated to more training . . . as well as effective supervision that includes interaction with colleagues and . . . supervisors. . . . [These] findings beg for . . . a much higher degree of support while on the job" (D. B. Swartz, personal communication, October 21, 1999).

Similar conclusions can be drawn from a survey conducted by the first author in 1999, of working interpreters in the Rochester, New York, area. They were asked to evaluate the adequacy of the training programs from which they graduated in light of their postgraduate occupational experiences. Nineteen of the 48 respondents graduated from "certificate" programs of 6 to 10 weeks' duration (for fluent signers); the other 29 attended 2-year associate's degree programs. In 15 out of 17 skill areas assessed,¹ drawn from all four demand categories, the interpreters from nondegree programs reported they were "insufficiently prepared" or "not at all prepared" by their programs. Interpreters from degree-granting programs reported they were "insufficiently prepared" in 5 of the 17 skill areas at the time of graduation. None of the 48 reported being "very well prepared" in any of the 17 skill areas. On average, respondents "strongly agreed" (4 on a scale of 5) with the statements "I would have preferred more supervised training before graduating" and "Greater skill development would occur if course work and experiential opportunities were more integrated and offered earlier." It would not be correct to assume that the respondents simply needed or wanted more practicum experience. Even though practica were rated as the "most helpful" (4 on a scale of 5) portion of their educations, these working interpreters rated the percentage of skills they now possessed as acquired 18% or less from practica. Table 2 provides supporting data. Respondents provided estimates of the percentage of each skill listed that they learned during their training program (including any practica) versus the percentage learned after graduation. The average estimate of the percentage of skills learned after their training had ended was over 66%.

We believe these data document a problem with interpreter training, not necessarily in the nature and length of school-based programs, but in the lack of a postgraduate training period of supervised interpreting

Table 2 Percentage of skills learned in versus outside of interpreter training programs

Skill or demand (ling., envir., inter- and intrapersonal)	% Learned during training	% Learned after training
Knowledge of ASL linguistic features	39	61
Knowledge of sign vocabulary	42	58
Making appropriate word choices during voicing	45	55
Making voicing sound fluid and natural	41	59
Assessing the language of deaf consumers	31	69
Helping hearing people utilize interpreter services	32	68
Building rapport with deaf and hearing consumers	21	79
Knowledge base for medical environments	36	64
Knowledge base for mental health environments	36	64
Knowledge base for business environments	21	79
Knowledge base for K-12 educational environments	45	55
Knowledge base for postsecondary environments	32	68
Skills to advocate for yourself and your needs	22	78
Ability to identify and deal with "inner noise"	25	75
Average percentage	33.4	66.6

practice. It is frightening that these interpreters judged that the majority of their education occurred after their formal training (and practica) had ended, while they were on the job, *servicing consumers*, with *no formal supervision*. Other professions (e.g., medicine, law enforcement) are associated with continued supervised learning after the classroom-based period of education has ended. Unlike interpreters, these newly graduated professionals are rarely the only individuals in the work environment with the specialized knowledge needed to conduct the work and they rarely perform their duties unsupervised, especially during the early years of practice.

Given the desire for and scarcity of advanced training and supervision, it is not surprising that Heller et al. (1986), Swartz (1999), and Watson (1987) attribute interpreter burnout and early departure from the profession directly to stress. If interpreters had guidance in advanced skills application, and supervision and mentorship during the professional seasoning period that follows graduation, more might survive this period, when their commitment to the field is initially challenged. Other professions, such as medicine, mental health, teaching, and law enforcement, all have learned the value of an extended period of practice-based instruction and supervision. It is no coincidence that these professions, which are highly demanding and which value independent judgment and the retention of skilled veterans, all require extended supervised training periods. The field of sign language interpret-

ing has not followed suit and continues to address the interpreter shortage through a singular focus on establishing more training programs. It can be argued that the lack of attention to early professional development and retention of recent graduates is an equal or greater cause of the national interpreter shortage than a limitation in the number of college-based interpreter training programs.

Despite the proliferation of interpreter training programs, now numbering over 130 in the United States and Canada, Frisberg's (1986) criticism that there exists "no universally accepted standard of what constitutes an adequate instructional program" (p. 88) remains largely true today. Sign language interpreting program graduates may hold only a "certificate" or an associate's, a bachelor's, or a master's degree. McIntire et al. (1991) have stated that "the education of sign language interpreters is insufficient and inadequate . . . [with] tremendous diversity in program philosophy, quality, structure and goals. The result is lack of consistency in the linguistic skills, knowledge, and attitudes of program graduates" (p. 2).

Efforts toward improvement are taking place. The Conference of Interpreter Trainers (CIT) and the RID have adopted standards for interpreter education programs (CIT, 1995). Yet this document seems to suggest variable definitions of interpreter competencies as well as educational standards unlikely to result in the degree of competency desired. The document first notes that

an interpreter must be able to serve "a diverse population in a variety of settings across a broad range of fields, [requiring] professional interpreters to possess a breadth of knowledge and depth of knowledge." Later in the CIT document, this ideal seems to be lowered to a "breadth of knowledge allowing interpretation of general discourse within several fields [and] sufficient specialized knowledge of one or two disciplines allowing interpretation of more specialized discourse within these disciplines." Is the former "breadth and depth of knowledge" now applied only to two specialty fields? How could a freelance interpreter, especially one educated in a certificate or associate's degree program, be expected to develop a "breadth of knowledge and depth of knowledge" sufficient to work competently in a college, health care, legal, and mental health setting, all of which she might be called into on a given day?

Perhaps the more significant question is where will this specialty content and judgment knowledge come from? It is not likely to be presented in the classroom environment of most interpreter training programs, especially those below the master's level. This leaves practicum training opportunities. Yet the CIT standards on practica state only that students should work with a qualified supervisor, observe other interpreters, be exposed to varying experiences and a variety of deaf consumers, and have opportunities to apply classroom knowledge to their work (CIT, 1995). There is no requisite number of hours specified for completion of this experiential component of the interpreter's education. In reality, the average practicum requirement for most interpreter training programs is about 200 hours. This time can be spent in observation of other interpreters, providing direct interpreting services, practicing interpreting skills with videotapes, in supervision with a mentor, and other activities related to the Deaf or interpreter communities. Students in many programs can complete these required practica hours in two semesters. Moreover, practicum opportunities for students to observe working interpreters and provide direct services are often limited to locations where interpreters work on a full-time basis, primarily educational settings (Frishberg, 1986). Usually, opportunities for interpreters to become familiar with the content, dynamics, and other occupational demands of environments such as legal, health care, college, and mental health, occur

after graduation, through unsupervised, on-the-job experience.

As the CIT progresses toward implementing interpreter education standards through a training program accreditation system (C. Cogen, personal communication, April 8, 1999), other entities have begun their own processes of defining and recognizing interpreter competencies. The Missouri Department of Mental Health (1998) has proposed minimum standards for sign language interpreters who work in their programs. Practice standards for interpreters in health care settings also have been proposed (Massachusetts Medical Interpreters Association & Education Development Center, Inc., no date). The New York State Department of Education has funded the National Technical Institute for the Deaf in Rochester, New York, to lead development of a certification process for interpreters who work in K-12 educational settings (Livadis, 1997, 1998). These efforts reflect growing concerns with how best to address the variability of interpreter skills and readiness for employment that has become evident in the wake of the ADA, which spawned a tremendous increase in the demand for interpreter services.

Although the ADA mandates that sign language interpreters be "qualified," the definition of qualified has been left unspecified. Hall (1999) notes that "without the tools or mechanisms to identify who has attained some level of competency, hiring entities are at a loss on how to satisfy the mandates of ADA in locating/providing 'qualified' interpreter services" (p. 1). Hall proposes model legislation that might be used for such purposes. A few states have enacted interpreter licensing laws; however, the status quo in most of the country is tremendous variability in interpreter competency. Not only do formal training programs vary in length, breadth, and quality (McIntire et al., 1991), the prevailing lack of regulations regarding interpreter qualifications allows persons with no formal training whatsoever to be hired into some interpreter positions. Persons with sign language fluency but no formal training, and even persons with limited sign language fluency and no formal training, are regularly hired in some settings out of employers' sheer desperation to meet access demands and/or failure to appreciate the skills and experience level qualified interpreters need.

Interpreter licensing legislation and practice stan-

dards typically are written with an emphasis on the length and nature of the interpreter's education and, in some cases, supervised practice experience. This approach is similar to that taken in developing license or certification standards for other high demand, high control professions, such as medicine, teaching, and law. In these professions, too, concerns periodically arise regarding quality assurance, educational methods and standards, and protection of the consumers being served. These professions also consider extended periods of supervised clinical practice (e.g., internships) an essential component of the training process following the classroom-based educational period. Another professional education trend in these fields, worthy of consideration for interpreter education, is the evolution of *problem-based learning* approaches.

Education scholars increasingly recommend that training in the practice professions involve hands-on service experience as early as possible. Problem-based learning emphasizes early student exposure to practice challenges with real consumers and, through this contextual approach, merges the acquisition of knowledge per se with evolution of professional practice and judgment skills, which are modeled and nurtured by seasoned teachers or mentors. Problem-based learning has been shown to trigger prior knowledge, motivate learners, and stimulate classroom discussion. It is being used in an increasing number and variety of professional schools (e.g., medical and nursing schools), and is a reaction against traditional education approaches that yield graduates insufficiently able to apply classroom knowledge to daily professional practice (Frost, 1996; Saarinen-Rahiika & Binkley, 1998). This educational trend also could be construed as the emerging preference in how to teach and hone decision latitude skills in high demand occupations. Witter-Merithew (1992) recommends a similar *competency-based education* approach for interpreter education, one which requires "that knowledge be demonstrated in 'real-world settings' over a period of time." Such programs would include "a strong experiential and application component" with "frequent self, peer and instructor feedback . . . and an immediate opportunity to integrate feedback into their work." Interpreter training programs also should provide students with "support and encouragement for this critical portion of the learning experience" (pp. 2, 5).

Conclusions

Sign language interpreting is a high demand occupation, one where the demands are numerous, dynamic, and interactive and arise from complex linguistic, environmental, interpersonal, and intrapersonal factors. Interpreting is also a profession that appears to present severe restrictions in decision latitude, especially in terms of responding to demands other than linguistic ones. This combination of high demand and low decision latitude puts interpreters at high risk for stress-related illness, injury (including CTD), and burnout, according to demand-control theory and related occupational stress research. The available empirical data regarding stress in the interpreting field support this perception, suggesting that the national shortage of sign language interpreters, in part, may arise from stress-related or stress-aggravated CTD disabilities and early career burnout. Although the high demand nature of the interpreting occupation cannot readily be altered, changes can be made in the area of decision latitude that may hold promise for reduction of the negative consequences of stress and subsequent improvement in the size and health of the professional interpreter resource pool. As with other professional service occupations, the nature of one's education, early professional development, and the behavioral standards of one's profession hold considerable importance in the development of decision latitude resources and skills.

Daniel Burch, former president of the RID, has noted that the trend in interpreter education is toward the proliferation of 4-year training programs (personal communication, April 9, 2000). Yet Dean's survey data, presented herein, suggest that the increase in educational time between a "certificate" program and a 2-year associate's degree program did not result in identifiable differences in graduates' views of their preparedness for interpreting work when asked to reflect upon their education. Will shifting from 2-year to 4-year training programs offer a benefit that was not apparent when comparing 6-week to 2-year programs? Roy (1993) states that 2-year programs are inadequate for training interpreters to meet the multiple and complex demands of the occupation, while Young (1985) questions the ability to provide adequate training in 4 or even 6 years of traditional instruction.

Perhaps the length of time in an interpreter training program is not so much the issue, as the nature of the training activities one is engaged in. We believe there is a need for an extended period of supervised practice for sign language interpreters, of a length and nature similar to internships common in other professional occupations that have high degrees of demand. We also believe that interpreter education prior to the internship level should include instruction regarding the full range of demands of the profession, including those that arise from environmental, interpersonal, and intrapersonal factors, and should prepare students to appreciate and respond to those demands in ways that fit the profession's ethical principles and behavioral guidelines. However, the current restrictions or disclarity in what those behavioral guidelines are must be addressed by interpreters and interpreter educators. It is our hope that demand-control theory and its application to the interpreting profession can inform that undertaking.

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Note

1. The 17 skill areas listed in the survey were as follows. *Linguistic Demand*: expressive ASL skills (voice to sign), expressive transliterating skills (voice to sign), voicing for ASL signers (sign to voice), voicing for English-oriented signers (sign to voice); *Environmental Demand*: preparedness to work in medical settings, preparedness to work in mental health settings, preparedness to work in general business settings, preparedness to work in K-12 educational settings, preparedness to work in postsecondary educational settings; *Interpersonal Demand*: assessing language mode of deaf consumer, ability to adapt to range of consumer communication modes, assessing hearing consumers' understanding of interpreting process, ability to adapt to hearing consumers' level of understanding of interpreting process, ability to educate deaf/hearing consumers about roles/duties/limitations of interpreting; *Intrapersonal Demand*: assertiveness skills to advocate for yourself and your needs, ability to identify one's "inner noise" and deal with it appropriately.

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