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Obrist P A, Webb R A, Sutterer J R & Howard J L. The cardiac-somatic relationship: some reformulations. *Psychophysiology* 6:569-87, 1970.
[Dept. Psychiatry, Med. Sch. and Neurobiology Program, Univ. North Carolina, Chapel Hill, NC]

Heart rate and somatic-motor activity (e.g., eye movements and respiration) in dogs, cats, and humans demonstrate close covariation, with a variety of behavioral paradigms (e.g., classical conditioning) indicating that heart rate is not invariably linked to psychological states involving attention, emotion, or motivation. [The *Science Citation Index*® (*SCI*®) and the *Social Sciences Citation Index*® (*SSCI*®) indicate that this paper has been cited in over 185 publications.]

Paul A. Obrist
Department of Psychiatry
School of Medicine
Division of Health Affairs
University of North Carolina
Chapel Hill, NC 27514

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It should be noted that the article attempted to correct a bias in the way we (behavioral scientists and social scientists) had, up until the time it was written, viewed the autonomic nervous system. The data cited to substantiate our arguments were from a series of simple studies with humans evaluating heart rate (HR) changes, both increases and decreases, which covary with somatic-motor changes such as eye movement and blinks, body movements, and electromyogram (EMG) activity associated with mouth movements (e.g., swallowing, opening and closing the mouth). The relationship is so pervasive and consistently seen as to force us to conclude that both HR and somatic-motor effects have a common initiation and central nervous system mechanism of control, as in exercise. In this case, HR appears to be under vagal or parasympathetic control. With respect to sympathetic control, our suggestion was to measure myocardial contractibility, which could be indexed by a rate of change measure such as the change in carotid pressure over time.

As to why the paper met with such success, I would guess it provides a novel way of understanding how operant conditioning and biofeedback could modify HR without resorting to some sort of mystical explanation like, for example, the operant contingency, which leaves most biologically oriented investigators quite unsatisfied. I might note that the popularity of the article is further testified to by the fact that it was published in total in a book entitled *Psychophysiology*.[1]

The paper was conceived because of my unhappiness with the way mediation was being used in psychophysiology. In the process of reviewing a manuscript, I wrote a brief editorial to the authors on this subject, but I recommended that the article be published. The editor of the journal was so impressed with my editorial that he invited me to write this article, which I managed to do with the editorial assistance of two graduate students and the help of two colleagues.

I ran into no obstacles getting the paper published, although some readers couldn't bring themselves to accept our conclusions. One even wrote me that "your work and thinking is [*sic*] impressive but it unnerves a lot of your friends." An equally important result, the cardiac-somatic relationship, which is a spin-off term from this article, has become part of our vocabulary, and most investigators seem to accept its thrust.[2-7]

1. **Obrist P A, Webb R A, Sutterer J R & Howard J L.** The cardiac-somatic relationship: some reformulations. (Porges S W & Coles M G H, eds.) *Psychophysiology*. Stroudsburg, PA: Dowden, Hutchinson & Ross, 1976. p. 229-47.
2. **Obrist P A, Sutterer J R & Howard J L.** Preparatory cardiac changes: a psychobiological approach. (Black A H & Prokasy W R, eds.) *Classical conditioning II*. New York: Appleton-Century-Crofts, 1972. p. 312-40.
3. **Langer A W, Obrist P A & McCubbin J A.** Hemodynamic and metabolic adjustments during exercise and shock avoidance in dogs. *Amer. J. Physiol.* 5:H225-30, 1979.
4. **Obrist P A.** *Cardiovascular psychophysiology: a perspective*. New York: Plenum, 1981. 237 p.
5. **Obrist P A, Light K C & Hastrup J L.** Emotion and the cardiovascular system—a critical perspective. (Izard C E, ed.) *Measurement of emotions in infants and children*. New York: Cambridge University Press, 1982. p. 299-316.
6. **Webb R A & Obrist P A.** The physiological concomitants of reaction time performance as a function of preparatory interval and preparatory interval series. *Psychophysiology* 6:389-403, 1970. (Cited 40 times.)
7. **Lawler J E & Obrist P A.** Indirect indices of contractile force. (Obrist P A, Black A H, Brener J & DiCara L, eds.) *Cardiovascular psychophysiology—current issues in response mechanisms, biofeedback and methodology*. Chicago: Aldine, 1974. p. 85-92.

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