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## Robert W. Levenson



### Professor

Email Address:

[boblev@berkeley.edu](mailto:boblev@berkeley.edu)

Office: 3415 Tolman

Education:

Ph.D., Vanderbilt University

Research Area:

[Clinical Science](#)

Secondary Research Area:

[Behavioral and Systems](#)

[Neuroscience,](#)

[Developmental, Social-](#)

[Personality](#)

Laboratory:

[Berkeley Psychophysiology](#)

[Laboratory](#)

Curriculum Vitae:

 [rlevenson\\_cv.pdf](#)

## Accepting Students: Yes

### Research Interests:

Emotion. Autonomic nervous system and facial expressive components, cultural influences, empathy, emotional control, emotional changes with aging, dementing disorders, and brain pathology. Marital interaction across the life span: emotional and physiological signs and predictors of marital distress.



### Research Description

## The Berkeley Psychophysiology Laboratory

Robert W. Levenson works in the areas of human psychophysiology and affective neuroscience, both of which involve studying the interplay between psychological and physiological processes. Much of his work focuses on the nature of human emotion, in terms of its physiological manifestations, variations in emotion associated with age, gender, culture, and pathology, and the role emotion plays in interpersonal interactions. Dr. Levenson's research group is currently focusing primarily on two major projects: a study of emotion and normal aging and a study of the impact of neurodegenerative diseases on emotional functioning, both supported by grants from the National Institute of Aging.

## Emotion and Aging

The centerpiece of this work has been an ongoing longitudinal study of a large sample of long-term first marriages in middle and old age. This work uses an observational methodology in which couples come to the

laboratory and engage in naturalistic discussions about important topics related to their relationship. These interactions are studied to determine if there are signs in emotional experience, behavior, language, and physiology that can be used to discriminate between the interactions of couples who are satisfied and dissatisfied with their relationships, to discriminate between couples at different stages of the life span, and to predict what will happen to the level of couples' relationship satisfaction over time. Couples are studied as they progress through prototypical later-life transitions (children leaving home for middle-aged couples, retirement and health changes for older couples), trying to determine what kinds of couples fare well as they cope with these transitions and what kinds of couples fare poorly.

The other focus of this work is to learn about normative changes in emotion that occur with age. Here, emotional reactivity, emotional regulation, and emotional knowledge/empathy are assessed in the laboratory in participants at different ages (cross-sectionally and longitudinally) to determine how human emotions change as we age. Unlike many other aspects of human functioning which show pronounced declines with age (e.g., memory, psychomotor skills), many aspects of emotional functioning appear to be relatively spared as we age, and some even show signs of continuing improvement and positive development in late life. Two new directions in this work examine the sources of individual differences in emotional functioning (focusing on genetic polymorphisms and changes in cognitive abilities) and the consequences of these individual differences for well-being and successful aging.

# Emotion in Neurodegenerative Disorders

In these studies, we are examining the ways that emotion (especially reactivity, regulation, and empathy), personality, language, and social behavior (especially marital interaction) are altered in the early stages of organic brain syndromes (frontotemporal dementia, Alzheimer's disease, amyotrophic lateral sclerosis, and orbitofrontal brain injuries). Of particular interest are those patients who show neural loss in brain areas thought to be critical to emotional functioning. This work builds upon our extensive prior work studying normative emotional processes, which enables us to detect subtle changes in the emotion system that are associated with the onset and course of neuropathology. Patients are studied longitudinally so that changes in the emotional realm can be associated with neural loss in particular brain regions. This research is being conducted in collaboration with a group of neurologists at UCSF and Berkeley and is currently being expanded to include a component concerned with the genetics of these disorders and another concerned with the differential diagnosis of the dementias in clinical practice.

## OTHER RESEARCH

A number of other research projects are also being conducted in Dr. Levenson's laboratory.

### Basic Studies of the Physiology of Emotions

In these studies, physiological changes (in both the autonomic nervous system and in the muscles that produce facial expressions) are studied during the emotions of anger, contempt, disgust, fear, happiness, sadness, and surprise. Emotions are produced in the

laboratory using a number of different methods (including emotional memories, posed emotional facial expressions, emotion-eliciting films, the interactions of couples in committed relationships, and musical selections). This research addresses the question of how these primary emotions differ physiologically, and how physiology reflects variations in emotions as they occur at different intensities, in blended combinations, in complex sequences, and as they ebb and flow over time.

### Studies of Emotional Communication and Control

In these studies, more complex aspects of emotion are being examined. These include: (a) emotional language--the words and metaphors people use to convey their feelings and the relationships between emotional language and accompanying expressive and physiological signs of emotion; (b) empathy--the relationships between physiological state and being able to know the feelings being experienced by another person; (c) emotional control--the subjective, behavioral, and physiological consequences of intentionally inhibiting emotion in both young and older subjects; and (d) emotional interaction in gay and lesbian couples--dyadic interactions are being examined to help understand the interplay between gender and gender-roles in committed relationships.

### Representative Student Research Projects

Examples of current and recent research projects undertaken by graduate students and postdoctorals working with Dr. Levenson include: (a) empathic accuracy and prosocial behavioral in young, middle-age, and elderly individuals; (b) emotional differences between patients with Alzheimer's and frontotemporal dementias; (c) emotional predictors of marital distress; (d) the impact of

neural loss in specific brain regions (e.g., anterior temporal lobes, amygdala) on emotional functioning; (e) pseudobulbar affect (uncontrollable emotional outbursts) in neurological patients; (f) positive emotions and physiological soothing; and (g) emotional abilities and well-being.

### Additional Training

Students working with Dr. Levenson typically learn the skills associated with psychophysiological measurement, the use of computers to process and analyze physiological data, the assessment of emotion by analyzing facial muscle movement, and other methods of behavioral coding. In addition to their course work in the Clinical Science Program, his students typically take courses in physiology, neuroanatomy, emotion, and human aging.



Selected Publications



Teaching

## Department of Psychology

2121 Berkeley Way  
University of California, Berkeley  
Berkeley, CA 94720-1650  
Phone: 510-642-5292  
Fax: 510-642-5293  
Email: [psychadmin@berkeley.edu](mailto:psychadmin@berkeley.edu)

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