

THE CORSINI
ENCYCLOPEDIA
of
PSYCHOLOGY
and
BEHAVIORAL
SCIENCE

THIRD EDITION
VOLUME 2

Edited by

W. EDWARD CRAIGHEAD
CHARLES B. NEMEROFF

The Corsini Encyclopedia of Psychology and Behavioral Science

Third Edition

VOLUME 2

Co-Editors

W. EDWARD CRAIGHEAD
*University of Colorado
Boulder, CO*

CHARLES B. NEMEROFF
*Emory University School of Medicine
Atlanta, GA*

Editorial Board

NORMAN ABELES
*Michigan State University
East Lansing, MI*

HUDA AKIL
*University of Michigan
Ann Arbor, MI*

PAUL B. BALTES
*Max Planck Institute
Berlin, Germany*

ALBERT BANDURA
*Stanford University
Stanford, CA*

DAVID H. BARLOW
*Boston University
Boston, MA*

AARON T. BECK
*Beck Institute
Bala Cynwyd, PA*

DENNIS CHARNEY
*Yale University School of Medicine
New Haven, CT*

JOSEPH T. COYLE
*Harvard Medical School
Belmont, MA*

GERALD C. DAVISON
*University of Southern California
Los Angeles, CA*

FLORENCE L. DENMARK
*Pace University
New York, NY*

RAYMOND DINGLEDINE
*Emory University School of Medicine
Atlanta, GA*

DWIGHT EVANS
*University of Pennsylvania Health System
Philadelphia, PA*

JACK M. GORMAN
*Columbia University College of Physicians and
Surgeons
New York, NY*

TOMAS HOKFELT
*Karolinska Institute
Stockholm, Sweden*

STEVE E. HYMAN
Rockville, MD

LEWIS JUDD
*University of California
San Diego, CA*

CLINTON D. KILTS
*Emory University School of Medicine
Atlanta, GA*

WALTER KINTSCH
*University of Colorado
Boulder, CO*

STEPHEN H. KOSLOW
*National Institute of Mental Health
Rockville, MD*

K. RANGA RAMA KRISHNAN
*Duke University Medical Center
Durham, NC*

JOSEPH D. MATARAZZO
*Oregon Health Sciences University
Portland, OR*

PAUL E. MEEHL
*University of Minnesota
Minneapolis, MN*

SHIGETADA NAKANISHI
*Kyoto University School of Medicine
Kyoto, Japan*

K. DANIEL O'LEARY
*State University of New York
Stony Brook, NY*

ANNE C. PETERSEN
*W. K. Kellogg Foundation
Battle Creek, MI*

K. WARNER SCHAIE
*Pennsylvania State University
University Park, PA*

MARTIN E. P. SELIGMAN
*University of Pennsylvania
Philadelphia, PA*

SOLOMON H. SNYDER
*Johns Hopkins University School of Medicine
Baltimore, MD*

CHARLES D. SPIELBERGER
*University of South Florida
Tampa, FL*

BONNIE R. STRICKLAND
*University of Massachusetts
Amherst, MA*

MICHAEL WERTHEIMER
*University of Colorado
Boulder, CO*

RICHARD E. WILCOX
*University of Texas
Austin, TX*



JOHN WILEY & SONS

New York • Chichester • Weinheim • Brisbane • Singapore • Toronto

This book is printed on acid-free paper. ©
Copyright © 2001 by John Wiley & Sons. All rights reserved.

Published simultaneously in Canada.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 750-4744. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158-0012, (212) 850-6011, fax (212) 850-6008. E-Mail: PERMREQ@WILEY.COM.

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that the publisher is not engaged in rendering professional services. If legal, accounting, medical, psychological or any other expert assistance is required, the services of a competent professional person should be sought.

Designations used by companies to distinguish their products are often claimed as trademarks. In all instances where John Wiley & Sons, Inc. is aware of a claim, the product names appear in initial capital or all capital letters. Readers, however, should contact the appropriate companies for more complete information regarding trademarks and registration.

ISBN 0-471-24096-6 (Volume 1)
ISBN 0-471-24097-4 (Volume 2)
ISBN 0-471-24098-2 (Volume 3)
ISBN 0-471-24099-0 (Volume 4)
ISBN 0-471-23949-6 (Four-volume set)

Printed in the United States of America
10 9 8 7 6 5 4 3 2 1

A rather forgotten area of research has been testing the psychoanalytic theory of repression—whether unpleasant events or materials are forgotten more than pleasant items. By and large the results are inconclusive. There is usually no difference in recall as a function of type of affective response: rather intense experiences, whether pleasant or aversive, are recalled better than neutral events, as is the case of the research reported earlier. Klugman (1956) found no difference in the retention of pleasant and unpleasant materials in both normal and neurotic subjects, which would seem to run counter to Freud's notion. Normals in particular retained more intensely toned material. Holmes and Schallow (1969) indicate that a true test of repression must involve an ego threat and designed their study accordingly. Their results showed that poorer performance on a test could readily be attributed to response competition (worrying about test feedback and its implications) instead of repression. Other studies involving ego threat that had positive results also seem to support response competition.

Finally, an even clearer example of an inhibitory effect of emotion on test performance is the phenomenon of test anxiety (Sarason, 1980). For those who are most susceptible to worry and emotionality during a school test, the following seems to be true: the range of cues attended to is reduced; processing emphasizes the physical stimulus rather than semantic content; there is a slightly shorter digit span in highly anxious subjects; deficit is present for both recall and recognition tests; and the highly anxious benefit more from relaxed retest conditions and memory supports (such as open-book tests) than do less anxious subjects.

REFERENCES

- Berlyne, D. E. (1966). Curiosity and exploration. *Science*, 153, 25–33.
- Blum, G. S. (1961). *A model of the mind*. New York: Wiley.
- Bower, G. H., & Mayer, J. D. (1985). Failure to replicate mood-dependent retrieval. *Bulletin of the Psychonomic Society*, 23, 39–42.
- Evans, T., & Denny, M. R. (1978). Emotionality of pictures and the retention of related and unrelated phrases. *Bulletin of the Psychonomic Society*, 11, 149–152.
- Kleinsmith, L. J., & Kaplan, S. (1963). Paired-associate learning as a function of arousal and interpolated interval. *Journal of Experimental Psychology*, 65, 190–193.
- Klugman, S. F. (1956). Retention of affectively toned verbal material by normals and neurotics. *Journal of Abnormal and Social Psychology*, 53, 321–327.
- Posner, M. I. (1978). *Chronometric explorations of mind*. Hillsdale, NJ: Erlbaum.
- Strongman, K. T., & Russell, P. N. (1986). Salience of emotion in recall. *Bulletin of the Psychonomic Society*, 24, 25–27.
- Uehling, B., & Sprinkle, R. (1968). Recall of a serial list as a function of arousal and retention interval. *Journal of Experimental Psychology*, 78, 103–106.
- Wagenaar, W. A., & Groeneweg, J. (1990). The memory of concentration camp survivors. *Applied Cognitive Psychology*, 4, 77–87.

Walker, E. L. (1958). Action decrement and its relation to learning. *Psychological Review*, 65, 129–142.

Weiner, B., & Walker, E. L. (1966). Motivational factors in short-term retention. *Journal of Experimental Psychology*, 71, 190–193.

SUGGESTED READING

Blaney, P. H. (1986). Affect and memory: A review. *Psychological Bulletin*, 22, 229–246.

Weiner, B. (1966). Effects of motivation on the availability and retrieval of memory traces. *Psychological Bulletin*, 65, 24–37.

M. R. DENNY

Michigan State University

ATTITUDES
DEFENSE MECHANISMS
EMOTIONS
MEMORY
PSYCHOANALYSIS
PUNISHMENT

EMOTIONAL CONTAGION

Emotional contagion has been defined as “the tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person and, consequently, to converge emotionally” (Hatfield, Cacioppo, & Rapson, 1993).

The Emotional Contagion Scale (Doherty, 1997) was designed to measure the extent to which men and women tend to “catch” expressions of joy, love, anger, fear, and sadness from others. Theoretically, emotions can be caught in several ways. Some researchers have argued that conscious reasoning, analysis, and imagination can account for the phenomenon; some (Aronfreed, 1970) contend that people must learn to share others' emotions, that contagion is a conditioned emotional response. Most, however, assume that emotional contagion is an even more primitive process, that it happens automatically, outside conscious awareness. Hatfield and her colleagues (1993), for example, argue that the process of emotional contagion operates as follows:

- *Proposition 1.* In conversation, people automatically and continuously mimic and synchronize their facial expressions, voices, postures, movements, and instrumental behaviors with those of others.
- *Proposition 2.* Subjective emotional experience is affected moment-to-moment by the feedback from such mimicry/synchrony.

Theoretically, emotional experience could be influenced by either (a) the central nervous system commands that direct such mimicry/synchrony in the first place; (b) the afferent feedback from

such facial, verbal, or postural mimicry/synchrony; or (c) conscious self-perception processes, wherein individuals draw inferences about their own emotional states on the basis of the emotional expressions and behaviors evoked in them by the emotional states of others. Consequently,

- *Proposition 3.* People tend, from moment to moment, to catch others' emotions.

Researchers have collected considerable evidence in support of these three propositions.

PROPOSITION 1

Researchers have found evidence that people do tend to imitate the facial expressions, postures, voices, and instrumental behaviors of others. Facial mimicry is at times almost instantaneous. People seem able to track the most subtle of moment-to-moment changes. Haggard and Isaacs (1966) observed that emotional experiences and their accompanying facial expressions may change with surprising speed—within a span of 125–200 ms. Social psychophysiological investigations have found that emotional experiences and facial expressions, as measured by electromyographic (EMG) procedures, tend to mimic the changes in emotional expression of those they observe, and that this motor mimicry can occur at levels so subtle that they produce no observable facial expressions (Cacioppo, Tassinary, & Fridlund, 1990). When subjects observe happy facial expressions, they show increased muscular activity over the zygomaticus major (cheek) muscle region. When they observe angry facial expressions, they show increased muscular activity over the corrugator supercilli (brow) muscle region (Dimberg, 1982).

Such mimicry begins almost at birth. Haviland and Lelwica (1987) found that 10-week-old infants could and would imitate their mothers' facial expressions of happiness, sadness, and anger. Mothers mimicked their infants' expressions of emotion as well. There also is voluminous evidence that people mimic and synchronize their vocal utterances. Communication researchers have found interspeaker influence on utterance durations, speech rate, latencies of response, and a host of other speech characteristics. People have been found to mimic and synchronize their postures and movements with others as well.

PROPOSITION 2

Researchers have found that emotions are tempered to some extent by somatic and skeletal feedback. Those researchers interested in testing the facial feedback hypothesis have employed a variety of different strategies for inducing subjects to adopt various emotional expressions. Sometimes they simply ask subjects to fake an emotional expression. Sometimes they ask subjects to exaggerate or to hide any emotional reactions they may have (see Lanzetta, Biernat, & Kleck, 1982). Sometimes they try to trick subjects into adopting various facial expressions (Laird & Bresler, 1991), or to arrange the setting/circumstance so subjects will unconsciously mimic others' emotional and facial expressions (Hsee, Hatfield, Carlson, & Chemtob, 1991). In all cases, scientists have found that

the emotional experiences of subjects are affected by feedback from the facial expressions they adopt. An impressive array of evidence supports the proposition that people's subjective emotional experiences are affected, moment-to-moment, by feedback from facial, vocal, postural, and movement mimicry.

PROPOSITION 3

Researchers from a variety of disciplines have provided evidence that emotional contagion exists. The majority of such work has come from animal researchers (Miller, Banks, & Ogawa, 1963); child psychologists interested in primitive emotional contagion, empathy, and sympathy; clinicians exploring the process of transference and countertransference; social psychologists (Hatfield et al., 1993); and historians.

REFERENCES

- Aronfreed, J. (1970). The socialization of altruistic and sympathetic behavior: Some theoretical and experimental analyses. In J. Macaulay & L. Berkowitz (Eds.), *Altruism and helping behavior* (pp. 103–126). New York: Academic.
- Cacioppo, J. T., Tassinary, L. G., & Fridlund, A. J. (1990). Skeletomotor system. In J. T. Cacioppo & L. G. Tassinary (Eds.), *Principles of psychophysiology: Physical, social, and inferential elements* (pp. 325–384). New York: Cambridge University Press.
- Dimberg, U. (1982). Facial reactions to facial expressions. *Psychophysiology*, *19*, 643–647.
- Doherty, R. W. (1997). The emotional contagion scale: A measure of individual differences. *Journal of Nonverbal Behavior*, *21*, 131–154.
- Haggard, E. A., & Isaacs, F. S. (1966). Micromomentary facial expressions as indicators of ego mechanisms in psychotherapy. In C. A. Gottschalk & A. Averback (Eds.), *Methods of research in psychotherapy* (pp. 154–165). New York: Appleton-Century-Crofts.
- Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1993). *Emotional contagion*. New York: Cambridge University Press.
- Haviland, J. M., & Lelwica, M. (1987). The induced affect response: 10-week-old infants' responses to three emotional expressions. *Developmental Psychology*, *23*, 97–104.
- Hsee, C., Hatfield, E., Carlson, J. G., & Chemtob, C. (1991). The effect of power on susceptibility to emotional contagion. *Cognition and Emotion*, *4*, 327–340.
- Laird, J. D., & Bresler, C. (1991). The process of emotional feeling: A self-perception theory. In M. Clark (Ed.), *Review of Personality and Social Psychology*.
- Lanzetta, J. T., Biernat, J. J., & Kleck, R. E. (1982). Self-focused attention, facial behavior, autonomic arousal and the experience of emotion. *Motivation and Emotion*, *6*, 49–63.
- Miller, R. E., Banks, J. H., & Ogawa, N. (1963). Role of facial expression in "cooperative-avoidance conditioning" in monkeys. *Journal of Abnormal and Social Psychology*, *67*, 24–30.

SUGGESTED READING

Bernieri, F. J. (1988). Coordinated movement and rapport in teacher-student interactions. *Journal of Nonverbal Behavior*, 12, 120-138.

E. HATFIELD
R. L. RAPSON
University of Hawaii

EMOTIONS
EMPATHY

EMOTIONS

Emotions are a basic component of human experience, but their exact nature has been elusive and difficult to specify. This is due to a number of causes, including the fact that so many systems of the body are involved in emotion. A second problem has been the tendency to separate emotion from cognition or rational thought processes. The physiological and psychological processes involved in emotion are, however, most likely interrelated. As a result, separation of emotion from these other aspects of experience may not be productive.

Emotions are generally thought of as strong mental states, usually involving excitement or high energy, that give rise to feelings and passions. There is also usually a valence or direction to this state: Emotions are generally positive or negative. Thus surprise, euphoria, anger, or fear, while varying in how positive or negative they are, are strong, energetic feelings.

Early depictions of emotion focused on their high-energy quality: Emotions were physical stirrings or excited mental states. Subsequently, the physical energy involved in emotion was seen as being controlled by the brain. Finally, integration of the psychological and physiological realms was achieved.

One of the most influential theories of emotion—developed independently by William James and Carl Lange—is usually referred to as the James-Lange theory of emotion. Basically, it postulated that emotions are made up of bodily changes (e.g., arousal) and a mental event or feeling. This in itself was not new. However, prevailing views of emotion at the time argued that an emotion-causing event was perceived, a feeling arose from that perception, and bodily expression of that feeling then followed. In other words, the mental state involved in emotion was determined directly by the event; physiological aspects were secondary. But James and Lange disagreed. In his *Principles of Psychology* (1890), James argued that the mental state or feeling, which was the emotion proper, followed from bodily changes. In essence, he was reversing the sequence generally believed to be true. According to James, an event was perceived, physiological changes occurred as a result of this event, and the feelings that one had as a result of physiological change was the emotion.

Emotion, then, was a mental feeling-state that followed directly from bodily changes. Different events were thought to cause dif-

ferent bodily changes and thus different emotions. Sad events caused bodily changes that led to sorrow, while frightening events led to a different type of bodily change that gave rise to fear. Most people believed that laughter was the result of being happy and crying was attributable to sadness. James and Lange argued the converse: laughter gave rise to happiness, crying gave rise to sadness, and trembling gave rise to fear.

The James-Lange theories have generated a great deal of response. Research and theory followed the publication of their theories and have continued to the present. One of the more far-reaching of these responses was provided by Cannon, who observed a weakness in the James-Lange formulation and proposed a theory of emotions based on their evolutionary value.

Cannon (1927) noted that the James-Lange theory implied that there was a specific pattern of bodily changes associated with each emotion. Since there were many different emotions, there must therefore be a large number of different patterns of bodily change. He then argued that research evidence did not support this, and focused his theory on a unitary pattern of bodily change.

According to Cannon, events that caused emotions gave rise to arousal of the sympathetic nervous system. This arousal involved secretion of epinephrine by the adrenal glands and included changes such as increased heart rate, increased respiration, and increased muscle tone. Cannon argued that the function of this arousal was to prepare the organism to deal with the event—to fight or flee, for example. In other words, an event that could cause harm generated arousal—an emergency response—that prepared the organism to cope with the event. Increased heart rate, respiration and so on, enabled the organism to respond more quickly, more alertly, and with greater strength, increasing its chances of survival.

Emotional states, Cannon argued, are related to this arousal, but they are not completely determined by one another. Bodily changes are constant; the same changes are involved in different emotional states. Feelings, on the other hand, vary from situation to situation. He saw the hypothalamus as the seat of both arousal and feeling states, and emotion as the product of these states as integrated by the central nervous system.

Several theories or criticisms have appeared in response to this model. Some, including Duffy's notion (1934) based on the concept of energy mobilization and Lindsley's activation theory (1951), focused on the role of arousal in emotion. Others focused on the role of the central nervous system in emotion. Papez (1937) reported that specific areas of the brain were associated with emotion, and subsequent work has identified the reticular formation, extending from the thalamus to the brain stem, as the center of activation or arousal. Research also suggests that electrical stimulation of specific areas of the brain causes a general emotional pattern classifiable as rage or fear. However, despite the fact that areas of the brain are necessary for emotional expression, there do not appear to be specific locations in the brain for each emotion.

Much modern research on emotion has focused on the interplay between bodily changes and feeling states. Arnold (1960) argued that mental evaluations of events determine emotional response, including bodily changes and feelings. Part of this determination involves evaluation of sensations: Feelings are