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RESEARCH EMPHASES

Human performance and motor skills, human motor learning, human factors, and ergonomics

EDUCATION

B.A.	University of California, Berkeley	1963
M.A.	University of California, Berkeley	1965
Ph.D.	University of Illinois, Urbana-Champaign	1967

RELEVANT WORK EXPERIENCE

Jun 2001 to Present	President, Human Performance Research Marina del Rey, CA
Oct 1998 to Present	Professor (Emeritus) of Psychology University of California, Los Angeles
Oct 1994 to Jun 2001	Principal Scientist, Human Factors Group Exponent Failure Analysis Associates, Inc.
Nov 1988 to Oct 1998	Professor, Department of Psychology Director, Motor Control Laboratory, 1988-1998 Chair, Cognitive Area, 1992-1994 University of California, Los Angeles
Sep 1980 to Oct 1988	Professor, Department of Kinesiology Director, Motor Control Laboratory, 1980-1988 University of California, Los Angeles
Sep 1974 to Jun 1980	Professor, Departments of Physical Education and Psychology Director, Motor Behavior Laboratory, 1974-1980 University of Southern California, Los Angeles
Sep 1970 to Jun 1974	Associate Professor (later Professor), Department of Physical Education, Director, Motor Behavior Laboratory, 1970-1974 University of Michigan, Ann Arbor
Sep 1967 to Jun 1970	Assistant Professor Departments of Physical Education and Psychology, University of Maryland, College Park

Revised: 10/2008

HONORS RECEIVED

Honorary Doctorate (Doctor Honoris Causa) for outstanding contributions to research, Katholieke Universiteit Leuven (Belgium), 1992.
Honorary Doctorate (Doctor Honoris Causa) for research contributions in movement control, Université Joseph Fourier, Grenoble, France, 1998.
C.H. McCloy Research Award, outstanding achievement in research, AAHPERD, 1984.
Distinguished Scholar Award, outstanding long-term research contributions, NASPSPA, 1992.
Western Collegiate and AAUW Still Rings Champion, 1961, 1962.
NCAA Gymnastics Championships, Still Rings, Third Place, 1962.
All-American Collegiate Gymnastics Team, 1962.

PROFESSIONAL ACTIVITIES

Founder and Editor Journal of Motor Behavior, 1969-1981
Managing Editor, Publisher Exercise and Sport Sciences Reviews, 1975-1976
Editorial Board (masthead) Journal of Motor Behavior, 1981-1998

Reviewer for at least fifteen other journals, including

Psychological Review
Psychological Bulletin
Human Factors
The Behavioral and Brain Sciences
Journal of Experimental Psychology: Learning, Memory, and Cognition
Acta Psychologica
Journal of Motor Behavior
Psychological Research
Journal of Experimental Psychology: Human Perception and Performance
Transportation Human Factors Journal

OFFICES AND MEMBERSHIPS HELD

Member, NASPSPA, 1968-present; President, 1976-1977
Chair, Cognitive Area, Psychology Department, UCLA, 1992-1994
Member, Psychonomic Society, 1968-
Member, Human Factors and Ergonomics Society, 1989-
Member, American Academy of Kinesiology and Physical Education, 1993-
President, Schick 35 Class Association, 1992, 2000
Member, International Olympic Committee Academy of Sciences, 1999-

CONTRACTS AND GRANTS RECEIVED

Development of a test battery to predict motor manipulative proficiency in manufacturing dental appliances. Heritage Laboratories (with R.W. Pew), 1972.
Open- and closed-loop processes in movement. National Science Foundation, Memory and Cognitive Processes Program, 1979.
Open- and closed-loop processes in movement. National Science Foundation, Memory and Cognitive Processes Program, 1982.
Roles of information feedback in motor skills training. Army Research Institute for the Behavioral and Social Sciences, 1985 (with D.C. Shapiro).
Motor learning and retention: A new approach. NATO, 1991 (with J. Pauwels and S. Swinnen).

PUBLICATIONS

Books:

Schmidt, R.A., & Wrisberg, C.A. (2008). Motor learning and performance (4th ed.). Champaign, IL: Human Kinetics Publishers.

Schmidt, R.A., & Lee, T.D. (2005). Motor control and learning: A behavioral emphasis (4th ed.). Champaign, IL: Human Kinetics Publishers. (Translation into Italian)

Schmidt, R.A., & Wrisberg, C.A. (2004). Motor learning and performance (3rd ed.). Champaign, IL: Human Kinetics Publishers. (Translation into Swedish)

Schmidt, R.A., & Wrisberg, C.A. (2000). Motor learning and performance (2nd ed.). Champaign, IL: Human Kinetics Publishers. (Translation into Italian)

Schmidt, R.A., & Lee, T.D. (1999). Motor control and learning: A behavioral emphasis (3rd. ed.). Champaign, IL: Human Kinetics Publishers.

Schmidt, R.A. (1992). Motor learning and performance instructor guide. Champaign, IL: Human Kinetics Publishers.

Schmidt, R.A. (1991). Motor learning & performance: From principles to practice. Champaign, IL: Human Kinetics Publishers. (Translations into Greek, Portuguese, French, and Japanese)

Schmidt, R.A. (1988). Motor control and learning: A behavioral emphasis (2nd. ed.). Champaign, IL: Human Kinetics Publishers. (Translation into Hungarian)

Schmidt, R.A. (1982). Motor control and learning: A behavioral emphasis. Champaign, IL: Human Kinetics Publishers.

Schmidt, R.A. (1975). Motor skills. New York: Harper and Row.

Videotape and CD:

Schmidt, R.A., & Braden, V. (1993). Motor learning: A new way to learn winning moves! La Jolla, CA: Vic Braden Sports.

Articles:

Schmidt, R.A. (in press, 2009). Principles of practice for the development of skilled actions: Implications for training and instruction in music. In A. Mornell (Ed.), Art in motion 2008: Music and athletic motor learning and performance. Graz, Austria: Internationaler Verlag der Wissenschaften.

Ayres, T.J., & Schmidt, R.A. (2008). Age-related risk patterns for escalators. CybErg 2008.

Lee, T.D., & Schmidt, R.A. (2008). Motor skill. In H.L. Roediger, III (Ed.), Cognitive psychology of memory (pp. 645-662). In Vol. 2 of J. Byrne (Ed.), Learning and memory: A comprehensive reference (4 volumes). Oxford: Elsevier.

Austermann Hula, S.N., Robin, D.A., Maas, E., Ballard, K.J., & Schmidt, R.A. (in press, 2008). Effects

of feedback frequency and timing on acquisition and retention in acquired apraxia of speech. Journal of Speech, Language, and Hearing Research.

Keetch, K.M., Lee, T.D., & Schmidt, R.A. (in press, 2008). Especial skills: Specificity embedded within generality. Journal of Sport and Exercise Psychology.

McNeil, M.R., Robin, D.A., & Schmidt, R.A. (2008). Apraxia of speech: Definition, differentiation and treatment. In M.R. McNeil (Ed.), Clinical management of sensorimotor speech disorders (pp. 249-268). New York: Thieme Medical Publishers.

Maas, E., Robin, D. A., Austermann Hula, S. N., Freedman, S. E., Wulf, G., Ballard, K. J., & Schmidt, R. A. (2008). Principles of motor learning in treatment of motor speech disorders. American Journal of Speech-Language Pathology, 17, 277-298.

Robin, D.A., Maas, E., Sandberg, Y., & Schmidt, R.A. (2006). Motor control and learning and childhood apraxia of speech. In P. Hall, L. Jordan, & D.A. Robin (Eds.), Developmental apraxia of speech: Theory and clinical practice (2nd ed.) (pp. 67-86). Austin, TX: Pro-Ed.

Young, D.E., Trachtman, D., Scher, I.S., & Schmidt, R.A. (2006). High school and college baseball pitchers' response and glove movements to line drives. Journal of Applied Biomechanics, 22, 25-32.

Keetch, K.M., Schmidt, R.A., Lee, T.D., & Young, D.E. (2005). Especial skills: Their emergence with massive amounts of practice. Journal of Experimental Psychology: Human Perception and Performance, 31, 970-978.

Trachtman, D., Schmidt, R.A., & Young, D.E. (2005). The role of pedal configuration in unintended acceleration and pedal-error accidents. In Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting (pp. 1984-1988). Santa Monica, CA: Human Factors and Ergonomics Society.

Schmidt, R.A. (2004). Does practice make perfect? Yes ... and no. 48^o North, 23, 53-57.

Schmidt, R.A. (2004). Some principles of practice for sailboat racers. Unpublished manuscript, Human Performance Research. (www.sailingscuttlebutt.com/news/04/ras/)

Schmidt, R.A. (2003). Motor schema theory after 27 years: Reflections and implications for a new theory. Research Quarterly for Exercise and Sport, 74, 366-375.

Young, D.E., Schmidt, R.A., Ayres, T.J., & Trachtman, D. (2001). Risk and driver behavior with adjustable pedals. In Proceedings of the Human Factors and Ergonomics Society 45th annual meeting (pp. 1656-1660). Santa Monica, CA: Human Factors and Ergonomics Society.

Schmidt, R.A., Lee, T.D., & Young, D.E. (2001). Control of rapid actions: Motor programming. In W. Karwowski (Ed.), International encyclopedia of ergonomics and human factors (pp. 202-204). London: Taylor and Francis.

Young, D.E., Schmidt, R.A., & Lee, T.D. (2001). Skill learning: Augmented feedback. In W. Karwowski (Ed.), International encyclopedia of ergonomics and human factors (pp. 558-561). London: Taylor and Francis.

Schmidt, R.A., Lee, T.D., & Young, D.E. (2001). Principles of simple movement. In W. Karwowski (Ed.), International encyclopedia of ergonomics and human factors (pp. 292-295). London: Taylor

and Francis.

- Schmidt, R.A., & Ray, R. (2001). Owners v. non-owners and risk of unintended acceleration. (Unpublished paper). Los Angeles: Exponent Failure Analysis Associates, Inc.
- Schmidt, R.A., & Wulf, G. (2001). Continuous concurrent feedback degrades skill learning: Implications for training and simulation. In R.W. Sweezy, & D.H. Andrews (Eds.), Readings in simulation and training: A 30-year perspective (pp. 129-145). Santa Monica, CA: Human Factors and Ergonomics Society.
- Clark, H.M., Robin, D.A., McCullagh, G., & Schmidt, R.A. (2001). Motor control in children and adults during a nonspeech oral task. Journal of Speech, Language, and Hearing Research, 44, 1015-1025.
- Schmidt, R.A. (2001). Foreword. In D. Snyder, Driving advantage (pp. iv-v). Menlo Park, CA: Doug Snyder.
- Lee, T.D., Schmidt, R.A., & Young, D.E. (2001). Skill learning: Conditions of training. In W. Karwowski (Ed.), International encyclopedia of ergonomics and human factors (pp. 562-565). London: Taylor and Francis.
- Knock, T.R., Ballard, K.J., Robin, D.A., & Schmidt, R.A. (2000). Influence of order of stimulus presentation on speech motor learning. A principled approach to treatment for apraxia of speech. Aphasiology, 14, 653-668.
- Young, D.E., Ayres, T.J., & Schmidt, R.A. (2000). Commentary on "Car drivers' adjustments to cyclists at roundabouts." Transportation Human Factors, 2, 23-26.
- Schmidt, R.A., Heuer, H., Ghodsian, D., & Young, D.E. (1998). Generalized motor programs and units of action in bimanual coordination. In M. Latash (Ed.), Bernstein's traditions in motor control (pp. 329-360). Champaign, IL: Human Kinetics Publishers.
- Schmidt, R.A., Young, D.E., & Ayres, T.J. (1998). Automobile seat belts: Usage patterns in automatic belt systems. Human Factors, 40, 126-135.
- Ayres, T., Kost, G., Schmidt, R., Werner, S., & Young, D. (1998). Risk analysis and bicycling injuries. In D.W. Pyatt (Ed.), Safety engineering and risk analysis 1998 (Vol. 8, pp. 57-60). New York: The American Society of Mechanical Engineers.
- McCarthy, R.L., Wood, C.T., Schmidt, R.A., Ayres, T.J., Young, D.E., & Arndt, S. (1998). Warning labels and accident data. In Proceedings of the Human Factors and Ergonomics Society 42nd annual meeting (pp. 550-553). Santa Monica, CA: Human Factors and Ergonomics Society.
- Ayres, T.J., McCarthy, R.L., Schmidt, R.A., & Wood, C.T. (1998). Risk perception and behavioral choice. International Journal of Cognitive Ergonomics, 2, 35-52.
- Ayres, T., Wood, C., Schmidt, R., Young, D., & Murray, J. (1998). Effectiveness of warning labels and signs. An update on compliance research. In Proceedings of the Silicon Valley ergonomics conference & exposition (pp. 199-205). San Jose, CA: San Jose State University.
- Schmidt, R.A., Heuer, H., Ghodsian, D., & Young, D.E. (1998). Generalized motor programs and units of action in bimanual coordination. In M. Latash (Ed.), Progress in motor control. Volume One. Bernstein's traditions in movement studies (pp. 329-360). Champaign, IL: Human Kinetics

Publishers.

- Schmidt, R.A., & Young, D.E. (1997). Unintended acceleration in automobiles: History of research and thinking, fundamental processes, and some parallels to aircraft accidents. Document No. FaAA-LA-R-97-01. Los Angeles: Exponent Failure Analysis Inc.
- McNeil, M.R., Robin, D., & Schmidt, R.A. (1997). Apraxia of speech: Definition, differentiation, and treatment. In M.R. McNeil (Ed.), Clinical management of sensorimotor speech disorders (pp. 311-344). New York: Thieme Medical Publishers.
- Schmidt, R.A. (1997). Motor skills, acquisition. In R. Dulbecco (Ed.), Encyclopedia of human biology (2nd ed.). Vol. X (pp. 3469-3476). New York: Academic Press.
- Wulf, G., & Schmidt, R.A. (1997). Variability of practice and implicit motor learning. Journal of Experimental Psychology: Learning, Memory, and Cognition, 23, 987-1006.
- Schmidt, R.A., Young, D.E., & Ayres, T.J., & Wong, J.R. (1997). Pedal misapplications: Their frequency and variety revealed through police accident reports. Proceedings of the Human Factors and Ergonomics Society 41st annual meeting (pp. 1023-1027). Santa Monica, CA: Human Factors and Ergonomics Society.
- Schmidt, R.A., & Wulf, G. (1997). Continuous concurrent feedback degrades skill learning: Implications for training and simulation. Human Factors, 39, 509-525.
- Schmidt, R.A., & Bjork, R.A. (1996). New conceptualizations of practice: Common principles in three paradigms suggest new concepts for training. In D.A. Robin, K.M. Yorkston, & D.R. Beukelman (Eds.), Disorders of motor speech: Assessment, treatment, and clinical characterization (pp. 3-23). Baltimore: Brookes Publishing.
- Schmidt, R.A., & Wulf, G. (1996). Augmented concurrent feedback: Implications for training and simulation. In Proceedings of the Human Factors and Ergonomics Society 40th annual meeting (pp. 1051-1054). Santa Monica, CA: Human Factors and Ergonomics Society.
- Ayres, T.J., Lau, E.C., Schmidt, R.A., & Young, D.E. (1996). Operator experience and accident risk. In Proceedings of the Human Factors and Ergonomics Society 40th annual meeting (pp. 947-951). Santa Monica, CA: Human Factors and Ergonomics Society.
- Wulf, G., & Schmidt, R.A. (1996). Average KR degrades parameter learning. Journal of Motor Behavior, 28, 371-381.
- Young, D.E., Ayres, T.J., Schmidt, R.A., & Bjelajac, V.M. (1996). Inherent movement variability as a cause of stair accidents. In Proceedings of the Silicon Valley Ergonomics Conference & Exposition, ErgoCon '96 (pp. 297-301). San Jose, CA: San Jose State University.
- Schneider, D.M., & Schmidt, R.A. (1995). Units of action in motor control: Role of response complexity and target speed. Human Performance, 8, 27-49.
- Heuer, H., Schmidt, R.A., & Ghodsian, D. (1995). Generalized motor programs for rapid bimanual tasks: A two-level multiplicative-rate model. Biological Cybernetics, 73, 343-356.
- Wulf, G., & Schmidt, R.A. (1995). Implizites Lernen motorischer Fertigkeiten. Sportliche Leistung und

Training, 70, 165-168.

Ayres, T.J., Schmidt, R.A., Steele, B.D., & Bayan, F.P. (1995). Visibility and judgment in car-truck night accidents. In D.W. Pratt (Ed.), Safety engineering and risk analysis--1995 (pp. 43-50). New York: The American Society of Mechanical Engineers.

Schmidt, R.A. (1994). Movement time, movement distance, and movement accuracy: A reply to Newell, Carlton, and Kim. Human Performance, 7, 23-28.

Wulf, G., Lee, T.D., & Schmidt, R.A. (1994). Reducing knowledge of results about relative versus absolute timing: Differential effects on learning. Journal of Motor Behavior, 26, 362-369.

Wulf, G., & Schmidt, R.A. (1994). Feedback-induced variability and the learning of generalized motor programs. Journal of Motor Behavior, 26, 348-361.

Wulf, G., & Schmidt, R.A. (1994). Contextual-interference effects in motor learning: Evaluating a KR-usefulness hypothesis. In J.R. Nitsch & R. Seiler (Eds.), Movement and sport: Psychological foundations and effects (Vol. 2): Motor control and motor learning (pp. 304-309). Sankt Augustin: Academia Verlag.

Schmidt, R.A. (1993). Unintended acceleration: Human performance considerations. In B. Peacock & W. Karwowski (Eds.), Automotive ergonomics: Human factors in the design and use of automobiles (pp. 431-451). London: Taylor and Francis.

Broker, J.P., Gregor, R.J., & Schmidt, R.A. (1993). Extrinsic feedback and the learning of kinetic patterns in cycling. Journal of Applied Biomechanics, 9, 111-123.

Wulf, G., Schmidt, R.A., & Deubel, H. (1993). Reduced feedback frequency enhances generalized motor program learning but not parameterization learning. Journal of Experimental Psychology: Learning, Memory, and Cognition, 19, 1134-1150.

Wulf, G., & Schmidt, R.A. (1993). Toward general principles of training across task domains. The American Journal of Psychology, 106, 609-616. [Review of: J.E. Morrison (Ed.), Training for performance. New York: Wiley]

Wulf, G., Schmidt, R.A., & Deubel, H. (1993). Zum Einfluss der Feedback-Häufigkeit auf das Erlernen von generalisierten motorischen Programmen und Bewegungsparameteren. In R. Daus & K. Blischke (Eds.), Aufmerksamkeit und Automatisierung in der Sportmotorik (pp. 248-253). Sankt Augustin: Academia.

Wulf, G., Schmidt, R.A., & Lee, T.D. (1993). Feedback frequency effects on motor skill acquisition. In S. Serpa, J. Alves, V. Ferreira, & A. Paula-Brito (Eds.), Proceedings of the 8th world congress of sport psychology (pp. 997-1001). Lisboa: ISSP.

Schmidt, R.A. (1992). Research on human reaching and grasping. Contemporary Psychology, 37, 255-256. [Review of M.A. Goodale (Ed.), Vision and action: The control of grasping.]

Young, D.E., & Schmidt, R.A. (1992). Augmented feedback for enhanced skill acquisition. In G.E. Stelmach & J. Requin (Eds.), Tutorials in motor behavior II (pp. 677-693). Amsterdam: Elsevier Science Publishers.

Lee, T.D., Wulf, G., & Schmidt, R.A. (1992). Contextual interference in motor learning: Dissociated

- effects due to the nature of task variations. The Quarterly Journal of Experimental Psychology, 44A, 627-644.
- Schmidt, R.A., & Bjork, R.A. (1992). New conceptualizations of practice: Common principles in three paradigms suggest new concepts for training. Psychological Science, 3, 207-217. [Reprinted in: Effective School Practices, 1993, 12, 36-48.]
- Young, D.E., & Schmidt, R.A. (1992). Augmented kinematic feedback for motor learning. Journal of Motor Behavior, 24, 261-273.
- Schmidt, R.A., & Young, D.E. (1991). Methodology for motor learning: A paradigm for kinematic feedback. Journal of Motor Behavior, 23, 13-24.
- Young, D.E., & Schmidt, R.A. (1991). Motor programs as units of movement control. In N.I. Badler, B.A. Barsky, & D. Seltzer (Eds.), Making them move: Mechanics, control, and animation of articulated figures (pp. 129-155). New York: Morgan Kaufmann Publishers.
- Schmidt, R.A. (1991). Feedback for skill acquisition: Preliminaries to a theory of feedback. Technical Report No. 1/91, Motor Control Laboratory, UCLA. (Contract No. MDA903-85-K-0225, U.S. Army Research Institute, Basic Research).
- Schmidt, R.A. (1991). Motor learning principles for physical therapy. In M. Lister (Ed.), Contemporary management of motor control problems (pp. 49-63). Alexandria, VA: Foundation for Physical Therapy.
- Teasdale, N., & Schmidt, R.A. (1991). Deceleration requirements and the control of pointing movements. Journal of Motor Behavior, 23, 131-138.
- Schmidt, R.A., Lange, C., & Young, D.E. (1991). Optimizing summary knowledge of results for skill learning. In R.B. Wilberg (Ed.), The learning, memory, and perception of perceptual-motor skills (pp. 119-142). Amsterdam: North-Holland.
- Schmidt, R.A. (1991). Motor skills, acquisition. In R. Dulbecco (Ed.), Encyclopedia of human biology (Vol. 5, pp. 121-129). Orlando, FL: Academic Press.
- Nicholson, D.E., & Schmidt, R.A. (1991). Scheduling information feedback to enhance training effectiveness. Proceedings of the Human Factors Society 35th annual meeting (pp. 1400-1403). Santa Monica, CA: Human Factors Society.
- Schmidt, R.A. (1991). Frequent augmented feedback can degrade learning: Evidence and interpretations. In J. Requin & G.E. Stelmach (Eds.), Tutorials in motor neuroscience (pp. 59-75). Dordrecht: Kluwer Academic Publishers.
- Schmidt, R.A. (1990). Distinguished Scholar Award to Jack Ashton Adams. NASPSPA Newsletter, 15, 4-5.
- Young, D.E., & Schmidt, R.A. (1990). Units of motor behavior: Modifications with practice and feedback. In M. Jeannerod (Ed.), Attention and performance XIII (pp. 763-795). Hillsdale, NJ: Laurence Erlbaum.
- Winstein, C.J., & Schmidt, R.A. (1990). Reduced frequency of knowledge of results enhances motor skill learning. Journal of Experimental Psychology: Learning, Memory, and Cognition, 16, 677-

- Swinnen, S.P., Schmidt, R.A., Nicholson, D.E., & Shapiro, D.C. (1990). Information feedback for skill acquisition: Instantaneous knowledge of results degrades learning. Journal of Experimental Psychology: Learning, Memory, and Cognition, 16, 706-716.
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- Schmidt, R.A., Lange, C., & Young, D.E. (1990). Optimizing summary knowledge of results for skill learning. Human Movement Science, 9, 325-348.
- Schmidt, R.A. (1990). Eine Schematheorie über das Lernen diskreter motorischer Fertigkeiten. Psychomotorik in Forschung und Praxis, 2, 1-84. (Translation by P. Kaul and K.W. Zimmermann)
- Winstein, C.J., & Schmidt, R.A. (1989). Sensorimotor feedback. In D.H. Holding (Ed.), Human skills (2nd ed., pp. 17-47). New York: Wiley.
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- Schmidt, R.A., Young, D.E., Swinnen, S., & Shapiro, D.C. (1989). Summary knowledge of results for skill acquisition: Support for the guidance hypothesis. Journal of Experimental Psychology: Learning, Memory, and Cognition, 15, 352-359.
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- Zelaznik, H.N., Schmidt, R.A., & Gielen, S.C.A.M. (1986). Kinematic properties of rapid aimed hand movements. Journal of Motor Behavior, 18, 353-372.
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165). Amsterdam: North Holland.

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