

David L. Gilden
Vita

Personal:

Address: Office: Department of Psychology
Seay 5.118, UT-Austin
Austin, TX 78712
(512) 471-6584
dgilden@utexas.edu

Education:

B.A. 1974 Mathematics and Philosophy, University of Wisconsin at Madison
M.A. 1979 Astronomy, University of Texas at Austin
Ph.D. 1982 Astronomy, University of Texas at Austin

Employment:

1982-1985 Postdoctoral Fellow, The Institute for Advanced Study: Astrophysics Section
in the School of Natural Sciences
1985-1986 Postdoctoral Fellow, The Virginia Institute for Theoretical Astrophysics
1986-1988 Postdoctoral Fellow, Department of Psychology, University of Virginia
1988-1989 Lecturer, Department of Psychology, University of Virginia
1989-1992 Assistant Professor, Department of Psychology, Vanderbilt University
1992-1995 Assistant Professor, Department of Psychology, University of Texas at Austin
1995-2001 Associate Professor, Department of Psychology, University of Texas at Austin
1997-2000 Head of Cognition and Perception Area, Department of Psychology, UT – Austin
2001- Professor, Department of Psychology, University of Texas at Austin

Awards and Honors:

1983 Recognition conferred by the University of Texas at Austin for outstanding dissertation
1986-1987 Junior Fellow in the Virginia Society of Fellows
1987-1989 National Research Service Award
1991-1994 Member of Gesellschaft fur Unendliche Versuche (GUV)

Teaching Experience:

Statistics for the Behavioral Sciences, Theory of Nonlinear Dynamical Systems, Mathematical
Techniques in Psychology, Perception, General Psychology, Artificial Intelligence, Theory of
Measurement and Decision Making, Experimental Design, Cognition, Memory, Animal Behavior,
Psychology of Music.

Professional Organizations:

Psychonomic Society

Invited Reviewer:

Journal of Experimental Psychology: Human Performance and Perception, Journal of Mathematical
Psychology, Perception, Perception and Psychophysics, Psychological Bulletin & Review, Psychological
Review, Vision Research, Journal of Motor Behavior, Psychological Science, Music Perception,
Psychology and Aging.

Publications (Astrophysics):

- Gilden, D. L., & Wheeler, J. C. (1980). Time-dependent optically thick accretion onto a black hole. *Astrophysical Journal*, 239, 705-711.
- Gilden, D. L. (1982). Dynamical evolution of substructure in molecular clouds. Ph.D. Thesis, University of Texas at Austin.
- Gilden, D. L. (1984). Clump collisions in molecular clouds: gravitational instability and coalescence. *Astrophysical Journal*, 279, 335-349.
- Gilden, D. L. (1984). Thermal instability in molecular clouds. *Astrophysical Journal*, 283, 679-686.
- Gilden, D. L., & Bahcall, J. N. (1984). Dark matter near the Sun: Simulated star counts and the Oort limit. In *Proceedings of the IAU Colloquium, No. 109*, B. Savage (Ed.)
- Gilden, D. L., & Shapiro, S. L. (1984). Gravitational radiation from colliding compact stars: hydrodynamical calculations in two dimensions. *Astrophysical Journal*, 287, 728-744.
- Gilden, D. L., & Tajima, T. (1984). Magnetic field reconnection in differentially rotating accretion disks. In *Proceedings of the IAU Symposium, No. 107*, R. Kundu (Ed.), 477-482.
- Gilden, D. L., & Bahcall, J. N. (1985). Sampling errors in the determination of the total amount of mass at the solar position. *Astrophysical Journal*, 296, 240-258.
- Tajima, T., Clark, A., Craddock, G. G., Gilden, D. L., Leung, W. K., Li, Y. M., Robertson, J. A., & Saltzman, B. J. (1985). Particle simulation of colliding plasmas, semiconductor plasmas, and stars. *American Journal of Physics*, 53, 365-370.
- Tajima, T., & Gilden, D. L. (1987). Reconnection-driven oscillations in dwarf nova disks. *Astrophysical Journal*, 320, 741-745.
- Torbett, M. V., & Gilden, D. L. (1993). On stellar accretion of matter through a disk and the ejection of bipolar flow. *Astronomy & Astrophysics*, 256, 686-688.
- Publications (Psychology):
- Proffitt, D. R., Gilden, D. L., Kaiser, M. K., & Whelan, S. M. (1988). The effect of configural orientation on perceived trajectory in apparent motion. *Perception and Psychophysics*, 43, 127-132.
- Gilden, D. L., MacDonald, K. E., & Lasaga, M. I. (1988). Masking with minimal contours: Selective inhibition with low spatial frequencies. *Perception and Psychophysics*, 44, 465-474.
- Gilden, D. L., & Proffitt, D. R. (1989). Understanding collision dynamics. *Journal of Experimental Psychology: Human Performance and Perception*, 15, 372-383.
- Proffitt, D. R., & Gilden, D. L. (1989). Understanding natural dynamics. *Journal of Experimental Psychology: Human Performance and Perception*, 15, 384-393.
- Kubovy, M., & Gilden, D. L. (1989). Apparent randomness is not always the complement of apparent order. In G. Lockhead & J. R. Pomerantz (Eds.), *The perception of structure*. Washington, DC: American Psychological Association. pp. 115-127.
- Gilden, D. L., Bertenthal, B. I., and Othman, S. (1990). Image statistics and the perception of apparent motion. *Journal of Experimental Psychology: Human Perception and Performance*, 16, 693-705.
- Gilden, D. L. (1991). On the origins of dynamical awareness. *Psychological Review*, 98, 554-568.
- Schmuckler, M. A., and Gilden, D. L. (1993). Auditory perception of fractal contours. *Journal of Experimental Psychology: Human Perception and Performance*, 19, 641-660.

- Gilden, D. L., Schmuckler, M. A., & Clayton, K. (1993). The perception of natural contour. *Psychological Review*, *100*, 460-478.
- Gilden, D. L. (1993). Perception. In S. Parker (Ed.), *McGraw-Hill Yearbook of Science & Technology*. New York: McGraw-Hill. pp. 289-291.
- Gilden, D. L., & Proffitt, D. R. (1994). Heuristic judgment of mass ratio in two-body collisions. *Perception and Psychophysics*, *56*, 708-720.
- Gilden, D. L., Blake, R., & Hurst, G. (1995). Neural adaptation of imaginary visual motion. *Cognitive Psychology*, *28*, 1-16.
- Gilden, D. L., & Gray Wilson, S. A. (1995). On the nature of streaks in signal detection. *Cognitive Psychology*, *28*, 17-64.
- Gilden, D. L., Thornton, T., & Mallon, M. W. (1995). 1/f noise in human cognition. *Science*, *267*, 1837-1839.
- Gilden, D. L., & Gray Wilson, S. A. (1995). Streaks in skilled performance. *Psychonomic Bulletin and Review*, *2*, 260-265.
- Gilden, D. L., Hiris, E., & Blake, R. (1995). The informational basis of motion coherence. *Psychological Science*, *6*, 235-240.
- Gilden, D. L. (1997). Fluctuations in the time required for elementary decisions. *Psychological Science*, *8*, 296-301.
- Price, C. M., & Gilden, D. L. (2000). Representations of motion and direction. *Journal of Experimental Psychology: Human Perception and Performance*, *26*, 18-30.
- Thornton, T., & Gilden, D. L. (2001). Attentional limitations in the sensing of motion direction. *Cognitive Psychology*, *43*, 23-52.
- Gilden, D. L. (2001). Cognitive emissions of 1/f noise. *Psychological Review*, *108*, 33-56.
- Thornton, T. L., & Gilden, D. L. (2005). Provenance of correlations in psychological data. *Psychonomic Bulletin and Review*, *12*, 409-441.
- Thornton, T. L., & Gilden, D. L. (2007). Parallel and serial processes in visual search. *Psychological Review*, *114*, 71-103.
- Gilden, D. L., & Hancock, H. (2007). Response variability in attention deficit disorders. *Psychological Science*, *18*, 796-802.
- Gilden, D. L., & Marusich, L. R. (2009). Contraction of time in attention-deficit hyperactivity disorder. *Neuropsychology*, *23*, 265-269.
- Gilden, D. L. (2009). Global analysis of cognitive variability. *Cognitive Science*, *33*, 1441-1467.
- Gilden, D. L., Thornton, T. L., & Marusich, L. R. (2010). The serial process in visual search. *Journal of Experimental Psychology, Human Perception and Performance*, *36*, 533-542.
- Paine, L. E., & Gilden, D. L. (2013). A class of temporal boundaries derived by quantifying the sense of separation. *Journal of Experimental Psychology: Human Perception and Performance*, *39*, 1581-1597.
- Marusich, L. R., & Gilden, D. L. (2014). Assessing temporal integration spans in ADHD through apparent motion. *Neuropsychology*. Advance online publication. <http://dx.doi.org/10.1037/neu0000080>

Invited Talks:

- Gilden, D. L. (1990). Can chaos bring order to the social sciences? Address given under the auspices of the Center for the Humanities, Vanderbilt University.
- Gilden, D. L. (1990). Fourier representations of rhythmic structures. Fractal structures as scaling rhythms. Two addresses given under the auspices of the Commonwealth Center for the Humanities, University of Virginia.
- Gilden, D. L. (1996). 1/f noise in human cognition. Colloquium given to the Department of Psychology, Vanderbilt University.
- Gilden, D. L. (1996). Complexity in human cognition. Southwestern Psychological Association.
- Gilden, D. L. (1996). Complexity of cognition. Colloquium given to the Department of Psychology, Johns Hopkins University.
- Gilden, D. L. (1997). Fluctuations in cognition. Colloquium given to the Department of Psychology, Arizona State University.
- Gilden, D. L. (1997). Perceptual constraints on understanding dynamics. Colloquium given to the Department of Psychology, University of Virginia.
- Gilden, D. L. (1998). Cognition may be complex. Colloquium given to the Department of Psychology, University of California at Irvine.
- Gilden, D. L. (2001). Cognitive emissions of 1/f noise. Colloquium given to the Department of Psychology, University of Chicago.
- Gilden, D. L. (2001). The origins of time in perceiving animals. Colloquium given to the Department of Psychology, University of Chicago.
- Gilden, D. L. (2001). Traces of dynamic complexity in the time records of decisions and intentions. Symposium on Dynamic approaches to high-level cognition, 2001 Meeting of the Psychonomic Society.
- Gilden, D. L. (2002). Complexity of Cognition. Grand Rounds, Emmanuel Hospital, Portland, OR.
- Gilden, D. L. (2003). Structure of Working Memory. Grand Rounds, Emmanuel Hospital, Portland, OR.
- Gilden, D. L. (2004). How Attention is Used. Grand Rounds, Emmanuel Hospital, Portland, OR.
- Gilden, D. L. (2005). Dynamics of Implicit Memory. Colloquium given to the Department of Psychology, University of Wisconsin.
- Gilden, D. L. (2006). Cognition is complex and also very complicated. Colloquium given to the Department of Psychology, University of Maryland.
- Gilden, D. L. (2007). Parallel and serial processes in visual search. Colloquium given to the Department of Psychology, Indiana University.
- Gilden, D. L. (2007). Parallel and serial processes in visual search. Colloquium given to the Department of Psychology, University of Wisconsin.
- Gilden, D. L. (2008). Temporal Dynamics of ADHD. Public lecture given to the Texas Advanced Computing Center and Austin Forum.
- Gilden, D. L. (2008). Uncoordinated Action and the Breakdown of 1/f Scaling. Invited talk at Symposium on the Origins of 1/f noise in human motor behavior, NASPSA.
- Gilden, D. L. (2010). Temporality in ADHD cognition. Talk given to Women in Psychology at UT.

- Gilden, D. L. (2011). A universal time constant in the formation of temporal scenes. Talk given as a Distinguished Speaker to the Tejas Club Coffee at UT.
- Gilden, D. L. (2012). Origin of invariant timescales in human cognition. Variants and Invariants in Brain and Behavior. Technion Campus, Neve Sha'nan, Haifa, Israel.
- Gilden, D. L. (2014). History and Physics of Time. Views and Brews hosted by KUT.
- Gilden, D. L. (2014). Contraction of Time in ADHD. Grand Rounds at NYU Child Study Center.
- Gilden, D. L. (2015). ADHD and the Allometry of the Present Moment. Liberal Arts Council, UT Austin.

Conference Papers:

- Gilden, D. L., & Proffitt, D. R. (1987). Heuristic reasoning in judgments under certainty. Presented at the 1987 meeting of the Psychonomic Society.
- Kaiser, M. K., Proffitt, D. R., Gilden, D. L., & Whelan, S. M. (1987). Kinematic and kinetic organization in apparent motion. Presented at the 1987 meeting of the Annual Western Psychological Association.
- Gilden, D. L., & Bertenthal, B. I. (1988). The role of low spatial frequencies in the perception of apparent motion. Presented at the 1988 meeting of the Association for Research in Vision and Ophthalmology.
- Kubovy, M., & Gilden, D. L. (1988). More random than random: A study of scaling noises. Presented at the 1988 meeting of the Psychonomic Society.
- Kubovy, M., & Gilden, D. L. (1989). Generative Randish. Presented at the Yale Symposium on the Perception of Structure in honor of Wendell Garner.
- Gilden, D. L., & Schmuckler, M. (1989). The perception of fractal structure. Presented at the 1989 meeting of the Association for Research in Vision and Ophthalmology.
- Schmuckler, M., & Gilden, D. L. (1989). Discrimination of auditory fractal noises. Presented at the 1989 meeting of the Acoustical Society.
- Gilden, D. L., & Schmuckler, M. (1989). The perception of fractal contour. Presented at the 1989 meeting of the Psychonomic Society.
- Kubovy, M., & Gilden, D. L. (1989). Heuristics in the generation of random binary numbers. Presented at the 1989 meeting of the Psychonomic Society.
- Gilden, D. L. (1990). Phase organization inhibits motion capture. Presented at the 1990 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L., Gray, S., & MacDonald, K. C. (1990). The hot human. Presented at the 1990 meeting of the Psychonomic Society.
- Gilden, D. L., & Kean, G. M. (1991). Measurement properties of static and moving images. Presented at the 1991 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L., & MacDonald, K. C. (1991). Why humans get hot. Presented at the 1991 meeting of the Psychonomic Society.
- Gilden, D. L., & Kaiser, M. K. (1992). Kinematic specification of depth and boundary. Presented at the 1992 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L., Blake, R., & Hurst, G. (1993). Imagined motion is influenced by adaptation. Presented at the 1992 meeting of the Psychonomic Society.

- Gilden, D. L., Hiris, E., & Blake, R. (1993). Motion coherence is perceived as information entropy. Presented at the 1993 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L., Hiris, E., & Blake, R. (1993). Motion coherence is perceived as information entropy. Presented at the 1993 meeting of the Psychonomic Society.
- Gilden, D. L. (1994). Streaky performance in visual psychophysics. Presented at the 1994 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L., Thornton, T., & Mallon, M. W. (1994). Noise in the production of spatial and temporal intervals. Presented at the 1994 meeting of the Psychonomic Society.
- Gilden, D. L., & Price, C. (1995). Determinants of memory for motion. Presented at the 1995 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L. (1996). Complex dynamics in visual cognition. Presented at the 1996 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L. (1996). Complexity in Cognition. Presented at the 1996 meeting of the Psychonomic Society.
- Gilden, D. L., Price, C. M., & Thornton, T. (1997). Visual search in motion fields. Presented at the 1997 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L. (1997). Complexity of human response. Presented at the 1997 meeting of the Psychonomic Society.
- Gilden, D. L. (1998). Fractal fluctuations in signal detection. Presented at the 1998 meeting of the Association for Research in Vision and Ophthalmology.
- Price, C. M., Gilden, D. L., & Thornton, T. (1998). Differential priming of task-irrelevant motion fields. Presented at the 1998 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L., Schmuckler, M., & Ahissar, M. (1998). Fluctuations in simple motor acts. Presented at the 1998 meeting of the Psychonomic Society.
- C. M. Price, T. Thornton, & Gilden, D. L. (1999). Reassessing efficiency of processing using a redundant targets visual search paradigm. Presented at the 1999 meeting of the Association for Research in Vision and Ophthalmology.
- Gilden, D. L. (1999). Types of fluctuation in visual discrimination. Presented at the 1999 meeting of the Association for Research in Vision and Ophthalmology.
- Thornton, T. L., & Gilden, D. L. (2000). Modeling reaction time and accuracy in multiple target search. Presented at the 2000 meeting of the Association for Research in Vision and Ophthalmology.
- Feinstein, T., & Gilden, D. L. (2004). Feature binding creates inhibition of return. Presented at the 2004 meeting of the Psychonomic Society.
- Thornton, T. L., & Gilden, D. L. (2005). Method for solving the serial/parallel issue in visual attention. Presented at the 2005 meeting of the Psychonomic Society.
- Paine, L. E., & Gilden, D. L. (2009). An implicit memory meter for event structure. Presented at the 2009 meeting of the Psychonomic Society.

Past Support:

NICHHD Grant HD07036 (NRSA Postdoctoral Fellowship)
Dynamic Information Processing

Sponsor: Dennis Proffitt
 Direct Costs: \$87,000
 Period of Support: 1/1/87 - 8/31/89

AFOSR Grant 87-0238
 Perceptual Constraints on Understanding Dynamics
 Principal Investigator: Dennis R. Proffitt
 Co-Principal Investigator: David L. Gilden
 Direct Costs: \$62,400
 Period of Support: 7/1/87 - 12/31/88

NASA-Ames University Consortium Grant NCA2-536
 Perceptual Processing of Rotational Motion
 Principal Investigator: David L. Gilden
 Direct Costs: \$4,167
 Period of Support: 7/1/90 - 6/30/91

NICHHD Grant HD16195
 Infant's Sensitivity to Kinematic Information
 Principal Investigator: Bennett I. Bertenthal
 Co-Principal Investigator: David L. Gilden
 Co-Principal Investigator: Dennis R. Proffitt
 Direct Costs: \$496,107
 Period of Support: 1/1/89 - 12/31/93

AFOSR Grant 91-0057
 Perceptual Constraints on Understanding Physical Dynamics
 Principal Investigator: Dennis R. Proffitt
 Co-Principal Investigator: David L. Gilden
 Direct Costs: \$217,204
 Period of Support: 12/1/90 - 11/30/93

AFOSR Grant 749620-93-1-0307
 Local Spatio-Temporal Analysis in Vision Systems
 Principal Investigators: Wilson S. Geisler, Alan C. Bovik, Duane G. Albrecht
 Co-Principal Investigators: Joydeep Ghosh, Lawrence K. Cormack, David Gilden, Boaz Super
 Direct Costs: \$3,200,000
 Period of Support: 5/1/93 - 3/31/97

NIMH Grant 1 R01-MH52640-01
 Perceptual Constraints on Understanding Dynamics
 Principal Investigators: David L. Gilden, Dennis R. Proffitt
 Direct Costs: \$581,567
 Period of Support: 10/1/94 - 5/31/98

NIMH Grant 1 R01-MH52640
 Perceptual Constraints on Understanding Dynamics
 Principal Investigators: David L. Gilden, Dennis R. Proffitt
 Direct Costs: \$480,000
 Period of Support: 6/1/98 - 5/31/01

NIMH Grant 1 R01-MH58606
 Fluctuations in Cognitive and Perceptual Activity
 Principal Investigator: David Gilden
 Direct Costs: \$79,118 in 1st year.
 Period of Support: 6/1/00 – 5/31/03

NIMH Grant 2 R01-MH58606
 Fluctuations in Cognitive and Perceptual Activity
 Principal Investigator: David Gilden

Direct Costs: \$290,000
Period of Support: 3/01/2004-2/28/2007

NIMH Grant 2 R01-MH65272
Logic of Motion Perception and Motion Understanding
Principal Investigator: David Gilden
Direct Costs: \$380,000
Period of Support: 3/01/2004-2/28/2007

NSF Grant BCS-0744989
Using ADHD to Probe the Temporal Dynamics of Cognition
Principal Investigator: David Gilden
Direct Costs: \$391,800
Period of Support: 3/15/2008-2/28/2012

NSF Grant BCS-0744989
Using ADHD to Probe the Temporal Dynamics of Cognition
Principal Investigator: David Gilden
Direct Costs: \$391,800
Period of Support: 3/15/2008-2/28/2012

Pending Applications:
Size scaling of temporal scene formation
NSF Grant BCS-1451914
Amount Requested: \$342,347