

References

- Aslin, R. N., & Salapatek, P. (1975). Saccadic localization of visual targets by very young human infant. *Perception & Psychophysics*, *17*(3), 293-302.
- Bahrick, L. E. (1987). Infants' intermodal perception of two levels of temporal structure in natural events. *Infant Behavior & Development*(10), 387-416.
- Bahrick, L. E. (1988). Intermodal learning in infancy – learning on the basis of 2 kinds of invariant relations in audible and visible events. *Child Development*, *59*(1), 197-209.
- Bahrick, L. E. (1992). Infants perceptual differentiation of amodal and modality-specific audio-visual relations. *Journal of Experimental Child Psychology*, *53*(2), 180-199.
- Bahrick, L. E. (1994). The development of infants sensitivity to arbitrary intermodal relations. *Ecological Psychology*, *6*(2), 111-123.
- Bahrick, L. E., & Lickliter, R. (2000). Intersensory redundancy guides attentional selectivity and perceptual learning in infancy. *Developmental Psychology*, *36*(2), 190-201.
- Bertelson, P., & Aschersleben, G. (2003). Temporal ventriloquism: crossmodal interaction on the time dimension - 1. evidence from auditory-visual temporal order judgment. *International Journal of Psychophysiology*, *50*(1-2), 147-155.
- Braddick, O. (1996). Binocularity in infancy. *Eye*, *10*, 182-188.
- Calvert, G. A., & Thesen, T. (2004). Multisensory integration: methodological approaches and emerging principles in the human brain. *Journal of Physiology-Paris*, *98*(1-3), 191-205.
- Clifton, R., Morrongiello, B. A., Kulig, J. W., & Dowd, J. M. (1981a). Developmental

- changes in auditory localization in infancy. In R. N. Aslin, J. R. Albatross, & M. R. Petersen (Eds.), *Development of perception: Psychobiological perspectives* (Vol. 1). Orlando, FL: Academic Press.
- Clifton, R., Morrongiello, B. A., Kulig, J. W., & Dowd, J. M. (1981b). Newborns' orientation toward sound: Possible implications for cortical development. *Child Development*(52), 833-841.
- Colonus, H., & Arndt, P. (2001). A two-stage model for visual-auditory interaction in saccadic latencies. *Perception & Psychophysics*, 63(1), 126-147.
- Dixon, N. F., & Spitz, L. (1980). The detection of auditory visual desynchrony. *Perception*, 9(6), 719-721.
- Dobson, V., & Teller, D. Y. (1978). Visual acuity in human infants: a review and comparison of behavioral and electrophysiological studies. *Vision Research*(18), 1469-1483.
- Dodd, B. (1979). Lip reading in infants – attention to speech presented in-synchrony and out-of-synchrony. *Cognitive Psychology*, 11(4), 478-484.
- Edelman, G. M. (1992). *Bright air, brilliant fire*. New York: Basic Books.
- Ehret, G. (1988). Auditory development: psychophysical and behavioral aspects. In E. Meisami & P. Timiras (Eds.), *Handbook of human growth and developmental biology* (Vol. 1, p. 141-54). Boca Raton, FL: CRC Press.
- Fantz, R. L. (1963). Pattern vision in newborn infants. *Science*, 140(356), 296.
- Field, A. (2000). *Discovering statistics using spss for windows*. London: Sage Publications.
- Field, J., Muir, D., Pilon, R., Sinclair, M., & Dodwell, P. (1980). Infants orientation to lateral sounds from birth to 3 months. *Child Development*, 51(1), 295-298.
- Frens, M. A., Vanopstal, A. J., & Vanderwilligen, R. F. (1995). Spatial and temporal factors determine auditory-visual interactions in human saccadic eye-movements. *Perception & Psychophysics*, 57(6), 802-816.
- Gibson, E. J. (1982). The concept of affordances in development: the renaissance of functionalism. In W. Collins (Ed.), *The concept of development: The minnesota symposia on child psychology*. Hillsdale, N.J.: L. Erlbaum.

- Gibson, J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin Company.
- Guthrie, D., & Buchwald, J. S. (1991). Significance testing of difference potentials. *Psychophysiology*, *28*(2), 240-244.
- Gwiazda, J., Bauer, J., Thorn, F., & Held, R. (1986). Meridional amblyopia does result from astigmatism in early- childhood. *Clinical Vision Sciences*, *1*(2), 145-152.
- Gwiazda, J., Brill, S., Mohindra, I., & Held, R. (1978). Infant visual acuity and its meridional variation. *Vision Research*(18), 1557-1564.
- Hairston, W. D., Wallace, M. T., Vaughan, J. W., Stein, B. E., Norris, J. L., & Schirillo, J. A. (2003). Visual localization ability influences cross-modal bias. *Journal of Cognitive Neuroscience*, *15*(1), 20-29.
- Harman, C., Posner, M. I., Rothbart, M. K., & Thomasthrapp, L. (1994). Development of orienting to locations and objects in human infants. *Canadian Journal of Experimental Psychology—Revue Canadienne De Psychologie Experimentale*, *48*(2), 301-318.
- Harrington, L. K., & Peck, C. K. (1998). Spatial disparity affects visual-auditory interactions in human sensorimotor processing. *Experimental Brain Research*, *122*(2), 247-252.
- Held, R., Birch, E., & Gwiazda, J. (1980). Stereoacuity of human infants. *Proceedings of the National Academy of Sciences of the United States of America—Biological Sciences*, *77*(9), 5572-5574.
- Heron, J., Whitaker, D., & McGraw, F. (2004). Sensory uncertainty governs the extent of audio-visual interaction. *Vision Research*, *44*(25), 2875-2884.
- Hofman, P. M., Van Riswick, J. G. A., & Van Opstal, A. J. (1998). Relearning sound localization with new ears. *Nature Neuroscience*, *1*(5), 417-421.
- Hughes, H. C., Nelson, M. D., & Aronchick, D. M. (1998). Spatial characteristics of visual-auditory summation in human saccades. *Vision Research*, *38*(24), 3955-3963.
- Hughes, H. C., Reuter-Lorenz, P. A., Nozawa, G., & Fendrich, R. (1994). Visual-

- auditory interactions in sensorimotor processing – saccades versus manual responses. *Journal of Experimental Psychology—Human Perception and Performance*, 20(1), 131-153.
- Jack, C. E., & Thurlow, W. R. (1973). Effects of degree of visual association and angle of displacement on the "ventriloquism" effect. *Perceptual and Motor Skills*(37), 967-979.
- Jiang, W., Wallace, M. T., Jiang, H., Vaughan, J. W., & Stein, B. E. (2001). Two cortical areas mediate multisensory integration in superior colliculus neurons. *Journal of Neurophysiology*, 85(2), 506-522.
- Kennett, S., Taylor-Clarke, M., & Haggard, P. (2001). Noninformative vision improves the spatial resolution of touch in humans. *Current Biology*, 11(15), 1188-1191.
- King, A. J., Schnupp, J. W. H., & Doubell, T. P. (2001). The shape of ears to come: dynamic coding of auditory space. *Trends in Cognitive Sciences*, 5(6), 261-270.
- Knudsen, E. I. (2002). Instructed learning in the auditory localization pathway of the barn owl. *Nature*, 417(6886), 322-328.
- Knudsen, E. I., & Knudsen, P. F. (1989). Vision calibrates sound localization in developing barn owls. *Journal of Neuroscience*, 9(9), 3306-3313.
- Lawson, K. (1980). Spatial and temporal congruity and auditory-visual integration in infants. *Developmental Psychology*(21), 185-192.
- Lessard, N., Pare, M., Lepore, F., & Lassonde, W. (1998). Early-blind human subjects localize sound sources better than sighted subjects. *Nature*, 395(6699), 278-280.
- Lewald, J., & Guski, R. (2003). Cross-modal perceptual integration of spatially and temporally disparate auditory and visual stimuli. *Cognitive Brain Research*, 16(3), 468-478.
- Lewkowicz, D. (2003). Learning and discrimination of audiovisual events in human infants: The hierarchical relation between intersensory temporal synchrony and rhythmic pattern cues. *Developmental Psychology*, 39, 795-804.
- Lewkowicz, D. J. (1986). Developmental-changes in infants bisensory response to synchronous durations. *Infant Behavior and Development*, 9(3), 335-353.

- Lewkowicz, D. J. (1992a). Infants response to temporally based intersensory equivalence – the effect of synchronous sounds on visual preferences for moving stimuli. *Infant Behavior & Development*, *15*(3), 297-324.
- Lewkowicz, D. J. (1992b). Infants responsiveness to the auditory and visual attributes of a sounding moving stimulus. *Perception & Psychophysics*, *52*(5), 519-528.
- Lewkowicz, D. J. (1994). Development of intersensory perception in human infants. In D. J. Lewkowicz & R. Lickliter (Eds.), *Development of intersensory perception: Comparative perspectives*. Norwood, N. J.: Lawrence Erlbaum Associates.
- Lewkowicz, D. J. (1996). Perception of auditory-visual temporal synchrony in human infants. *Journal of Experimental Psychology—Human Perception and Performance*, *22*(5), 1094-1106.
- Lewkowicz, D. J. (2000a). The development of intersensory temporal perception: An epigenetic systems/limitations view. *Psychological Bulletin*, *126*(2), 281-308.
- Lewkowicz, D. J. (2000b). Perceptual development: Visual, auditory, and speech perception in infancy. *American Journal of Psychology*, *113*(3), 488-500.
- Lewkowicz, D. J. (2002). Heterogeneity and heterochrony in the development of intersensory perception. *Cognitive Brain Research*, *14*(1), 41-63.
- Lewkowicz, D. J., & Turkewitz, G. (1980). Cross-modal equivalence in early infancy – auditory-visual intensity matching. *Developmental Psychology*, *16*(6), 597-607.
- Liu, G. B. (2003). Functional development of the auditory brainstem in the tammar wallaby (*macropus eugenii*): the superior olivary complex and its relationship with the auditory brainstem response (abr). *Hearing Research*, *175*(1-2), 152-164.
- Lueck, C. J., Crawford, T. J., Savage, C. J., & Kennard, C. (1990). Auditory-visual interaction in the generation of saccades in man. *Experimental Brain Research*, *82*(1), 149-157.
- Lyons-Ruth, K. (1977). Bimodal perception in infancy: Response to auditory-visual incongruity. *Child Development*, *48*, 820-827.
- Massaro, D. W., Cohen, M. M., & Smeele, P. M. T. (1996). Perception of asynchronous and conflicting visual and auditory speech. *Journal of the Acoustical*

Society of America, 100(3), 1777-1786.

- Maurer, D., & Lewis, T. L. (2001). Visual acuity: the role of visual input in inducing postnatal change. *Clinical Neuroscience Research*, 1(4), 239-247.
- McDonald, J. J., Teder-Salejarvi, W. A., & Hillyard, S. A. (2000). Involuntary orienting to sound improves visual perception. *Nature*, 407(6806), 906-908.
- McGurk, H., & Macdonald, J. (1976). Hearing lips and seeing voices. *Nature*, 264(5588), 746-748.
- Meredith, M. A., Nemitz, J. W., & Stein, B. E. (1987). Determinants of multisensory integration in superior colliculus neurons. i. temporal factors. *Journal of Neuroscience*, 7, 3215-3229.
- Meredith, M. A., & Stein, B. E. (1983). Interactions among converging sensory inputs in the superior colliculus. *Science*, 221(4608), 389-391.
- Meredith, M. A., & Stein, B. E. (1985). Descending efferents from the superior colliculus relay integrated multisensory information. *Science*(227), 657-659.
- Meredith, M. A., & Stein, B. E. (1986). Spatial factors determine the activity of multisensory neurons in cat superior colliculus. *Brain Research*, 365(2), 350-354.
- Meredith, M. A., & Stein, B. E. (1996). Spatial determinants of multisensory integration in cat superior colliculus neurons. *Journal of Neurophysiology*, 75, 1843-1857.
- Miller, J. (1982). Divided attention: Evidence for coactivation with redundant signals. *Cognitive Psychology*, 14(2), 247-279.
- Molholm, S., Ritter, W., Murray, M. M., Javitt, D. C., Schroeder, C. E., & Foxe, J. J. (2002). Multisensory auditory-visual interactions during early sensory processing in humans: a high-density electrical mapping study. *Cognitive Brain Research*, 14(1), 115-128.
- Moore, D. R. (1991). Anatomy and physiology of binaural hearing. *Audiology*, 30(3), 125-134.
- Moore, D. R. (2002). Auditory development and the role of experience. *British Medical Bulletin*, 63, 171-181.

- Morein-Zamir, S., Soto-Faraco, S., & Kingstone, A. (2003). Auditory capture of vision: examining temporal ventriloquism. *Cognitive Brain Research*, *17*(1), 154-163.
- Morrongiello, B. A. (1988a). Infants localization of sounds along 2 spatial dimensions – horizontal and vertical axes. *Infant Behavior & Development*, *11*(2), 127-143.
- Morrongiello, B. A. (1988b). Infants localization of sounds along the horizontal axis – estimates of minimum audible angle. *Developmental Psychology*, *24*(1), 8-13.
- Morrongiello, B. A., & Trehub, S. E. (1987). Age-related-changes in auditory temporal perception. *Journal of Experimental Child Psychology*, *44*(3), 413-426.
- Muir, D., Abraham, W., Forbes, B., & Harris, L. (1979). The ontogenesis of an auditory localization response from birth to 4 months of age. *Canadian Journal of Psychology—Revue Canadienne De Psychologie*, *33*(4), 320-333.
- Muir, D. W., Clifton, R. K., & Clarkson, M. G. (1989). The development of a human auditory localization response - a u-shaped function. *Canadian Journal of Psychology—Revue Canadienne De Psychologie*, *43*(2), 199-216.
- Munhall, K. G., Gribble, P., Sacco, L., & Ward, M. (1996). Temporal constraints on the mcgurk effect. *Perception & Psychophysics*, *58*(3), 351-362.
- Neil, P. A., Chee-Ruiter, C., Scheier, C., Lewkowicz, D., & Shimojo, S. (in press). Development of multisensory spatial integration and perception in humans. *Developmental Science*.
- Perrott, D. R., Saberi, K., Brown, K., & Strybel, T. Z. (1990). Auditory psychomotor coordination and visual search performance. *Perception & Psychophysics*(48), 214-226.
- Piaget, J. (1952). *The origins of intelligence in children*. New York: International Universities Press.
- Radeau, M., & Bertelson, P. (1977). Adaptation to auditory-visual discordance and ventriloquism in semirealistic situations. *Perception & Psychophysics*(22), 137-146.
- Scheier, C., Lewkowicz, D. J., & Shimojo, S. (2003). Sound induces perceptual reorganization of an ambiguous motion display in human infants. *Developmental*

- Science*, 6(3), 233-241.
- Schneider, B., Bull, D., & Trehub, S. (1988). Binaural unmasking in infants. *The Journal of the Acoustical Society of America*, 83(3), 1124-1132.
- Sekuler, R., Sekuler, A. B., & Lau, R. (1997). Sound alters visual motion perception. *Nature*, 385(6614), 308-308.
- Shams, L., Allman, J., & Shimojo, S. (2001). Illusory visual motion induced by sound. In *Society for neuroscience abstracts* (Vol. 27, p. 1340).
- Shams, L., Kamitani, Y., & Shimojo, S. (2000). Illusions – what you see is what you hear. *Nature*, 408(6814), 788-788.
- Slutsky, D. A., & Recanzone, G. H. (2001). Temporal and spatial dependency of the ventriloquism effect. *Neuroreport*, 12(1), 7-10.
- Spelke, E. S. (1979). Perceiving bimodally specified events in infancy. *Developmental Psychology*, 15(6), 626-636.
- Spelke, E. S. (1988). Where perceiving ends and thinking begins: The apprehension of objects in infancy. In A. Yonas (Ed.), *Perceptual development in infancy: The minnesota symposia on child psychology* (Vol. 20, p. 197-234).
- Spelke, E. S., Born, W. S., & Chu, F. (1983). Perception of moving, sounding objects by 4-month-old infants. *Perception*(12), 719-732.
- Stein, B. E. (1998). Neural mechanisms for synthesizing sensory information and producing adaptive behaviors. *Experimental Brain Research*, 123(1-2), 124-135.
- Stein, B. E., Hunnecutt, W. S., & Meredith, M. A. (1988). Neurons and behavior: The same rules of multisensory integration apply. *Brain Research*(113), 355-358.
- Stein, B. E., & Meredith, M. A. (1993). *The merging of the senses*. Cambridge, MA: The MIT Press.
- Stein, B. E., & Wallace, M. T. (1996). Comparisons of cross-modality integration in midbrain and cortex. In *Extrageniculostriate mechanisms underlying visually-guided orientation behavior* (Vol. 112, p. 289-299). (BJ08P)
- Teder-Salejarvi, W. A., McDonald, J. J., Di Russo, F., & Hillyard, S. A. (2002). An analysis of audio-visual crossmodal integration by means of event-related potential (erp) recordings. *Cognitive Brain Research*, 14(1), 106-114.

- Thompson, S., Shams, L., Kamitani, Y., & Shimojo, S. (2001). Brain mechanisms underlying a sound-induced visual illusion. In *Society of neuroscience* (Vol. 27, p. 1342).
- Vroomen, J., & Gelder, B. de. (2000). Sound enhances visual perception: Cross-modal effects of auditory organization on vision. *Journal of Experimental Psychology-Human Perception and Performance*, *26*(5), 1583-1590.
- Wallace, M. T., Meredith, M. A., & Stein, B. E. (1993). Converging influences from visual, auditory, and somatosensory cortices onto output neurons of the superior colliculus. *Journal of Neurophysiology*, *69*(6), 1797-1809.
- Wallace, M. T., & Stein, B. E. (1996). Sensory organization of the superior colliculus in cat and monkey. In *Extrageniculostriate mechanisms underlying visually-guided orientation behavior* (Vol. 112, p. 301-311). Amsterdam: ELSEVIER SCIENCE PUBL B V. (Times Cited: 27 Cited Reference Count: 31 English Review BJ08P)
- Wallace, M. T., & Stein, B. E. (1997). Development of multisensory neurons and multisensory integration in cat superior colliculus. *Journal of Neuroscience*, *17*(7), 2429-2444.
- Wallace, M. T., & Stein, B. E. (2000). Onset of cross-modal synthesis in the neonatal superior colliculus is gated by the development of cortical influences. *Journal of Neurophysiology*, *83*(6), 3578-3582.
- Wallace, M. T., & Stein, B. E. (2001). Sensory and multisensory responses in the newborn monkey superior colliculus. *Journal of Neuroscience*, *21*(22), 8886-8894.
- Wallace, M. T., Wilkinson, L. K., & Stein, B. E. (1996). Representation and integration of multiple sensory inputs in primate superior colliculus. *Journal of Neurophysiology*, *76*(2), 1246-1266.
- Wertheimer, M. (1961). Psychomotor coordination of auditory and visual space at birth. *Science*, *134*(349), 1692-&.
- Zwiers, M. P., Van Opstal, A. J., & Cruysberg, J. R. M. (2001). A spatial hearing deficit in early-blind humans. *Journal of Neuroscience*, *21*(9), art. no.-RC142.