

# Milton/Wiseman Meta-analysis

“Does Psi Exist? Lack of Replication of an  
Anomalous Process of Information Transfer  
*Psychological Bulletin*, 1999, 125(4), 387-391

# Procedure Used

- 30 Ganzfeld studies begun in 1987 or later and published by Feb 1997, each with  $n$  and direct hits (or equivalent)
- Compute p-value using direct hits and  $n$
- Find z-value corresponding to that p-value, with no adjustment for sample size  $n$
- Find effect size as  $z/\sqrt{n}$
- Find average effect size, weighing *equally*
- Find Stouffer  $z = (\sum z) / \sqrt{30}$  (30 studies)
- Find overall p-value using Stouffer  $z$

# Problem with this method

- Weights each *study* equally rather than each *session*. No sample size adj. in z.
- Simple example:

Study	n	hits	p-value	z	ES
1	100	40	.001	3.09	0.31
2	20	2	.976	-1.98	-0.44

M/W method: Stouffer z = 0.78, p-value=0.22, mean ES=-.065  
Exact binomial p-value: n=120, 42 hits, hit rate=0.35, is .009

# Milton/Wiseman Meta-analysis

- Using their method
  - Stouffer  $z = 0.70$ , p-value = .24
  - Average effect size = .013
- Using exact binomial
  - $n = 1198$ ,  $x = 327$
  - p-value = .037
  - hit rate = .27