Contents

Preface	7
Statistics – Descriptive and Inferential	
Minimize your losses	11
Another look at the mean, median, and standard deviation	15
Multiplicative analogues of some statistics	17
Significance tests die hard: The amazing persistence of a probabilistic	
misconception	22
Tell me the method, I'll give you the mean	46

Probability

Do men have more sisters than women?	63
Of probabilistic knights and knaves	65
Children's construction of fair chances: Adjusting probabilities	74
Lewis Carroll's obtuse problem	123
Children's concept of probability as inferred from their binary	
choices – revisited	131
Appendix	
Visual representations of the probability of the union of two events	174

Coincidences

On coincidences	
Judgment of coincidences: Mine versus yours	

Puzzles and Paradoxes

A closer look at the probabilities of the notorious three prisoners	.213
The exchange paradox: Probabilistic and cognitive analysis	
of a psychological conundrum	.240
Why don't we live forever?	.273
When truisms clash: Coping with a counterintuitive problem	
concerning the notorious two-child family	.280
A tale of two probabilities	.294
Monty's dilemma with no formulas	.303

Randomness

Making sense of randomness: Implicit encoding as a basis for judgment313
Subjective patterns of randomness and choice: Some consequences
of collective responses

Infinity

Infinity: A cognitive challenge	1
The infinite challenge: Levels of conceiving the endlessness of numbers44	7

In Conclusion (for entertainment)

A quick quiz for self-examination	
Answers of the quick quiz	
List of the Articles	

Preface

Publishing one's own collection of articles is rather immodest. I decided to take such a vain step when I realized that psychologists – potential readers of something like "Children's construction of fair chances" – would never get to read a paper like the one with the late Ester Samuel-Cahn (2001) on Lewis Carroll's error, and vice versa. Hopefully, via this book, both kinds of articles would reach an audience interested in enriching the learning and the teaching of statistics.

The academic level required for reading the articles doesn't exceed that of a basic course in probability and statistics. Side by side with studious research like that on children's concept of probability, the collection includes somewhat lighter, more refreshing items, as, for example, a quick quiz. Each paper can be read in itself, independently of the other ones or their order.

As always, my main devoted partner in effectuating this book is Rafi (Raphael Falk). I am also indebted to Avital Lavie (Lann), Jonathan Nadav, Ram Goldberg and the Magnes team members for compiling a book out of my separate contributions. Amit Baskin contributed to designing the cover, and, most importantly, advised and helped me devotedly in a lot of other matters. This book couldn't have been published without his contribution.

Last but not least, our children, Raya and Oren, the grandchildren (and the twin great-grandchildren) were patient, helpful, and inspiring.