Texts of the early 1980s reflected the negative biases of both popular and professional opinion of the 1950s and 1960s (Scarr, 1998). In the 1970s, the so-called first wave of child-care research generally failed to document negative consequences of maternal employment and day care and revealed some positive effects (Clarke-Stewart & Fein, 1983; Etaugh, 1980; Scarr, 1984; see also Belsky, 1986). These more favorable outcomes appeared in late 1980s to early 1990s introductory texts.

A second wave of child-care research in the 1980s examined variables that mediate the effects of day care and maternal employment (e.g., quality and variety of child-care arrangements and child characteristics such as age, gender, and ethnicity). These studies (e.g., Clarke-Stewart, 1989; Etaugh, 1993; Scarr & Eisenberg, 1993) led to a more balanced picture of the effects of particular child-care settings on individual children. The introductory texts of the mid-1990s, reflecting these views, focused less on whether day care and maternal employment are good or bad and more on mediating variables. These texts were more balanced in their coverage than the late 1980s to early 1990s texts (47% vs. 35%) and more often concluded that day care and maternal employment per se have no effects on children (26% vs. 0%).

The third wave of child-care research currently underway includes the broader influence of family attitudes and interactions as these interrelate with child-care and maternal employment variables to affect children's development (e.g., Clarke-Stewart, Allhusen, & Clements, 1998; Scarr, 1998). The outcomes of this latest research no doubt will appear in the next generation of introductory psychology texts.

It is troubling to note that even in the mid-1990s, one third of introductory texts failed to mention either maternal employment, now the norm in this country, or day care, increasingly a fact of life for families. Because many college students have access to an introductory psychology textbook, authors, editors, publishers of these texts, and instructors of introductory psychology courses must provide students with current information about the complex issues of day care and maternal employment.

References

Barglow, P., Vaughn, B. E., & Molitor, N. (1987). Effects of maternal absence due to employment on the quality of infant–mother attachment in a low risk sample. *Child Development, 58,* 945–954.

Belsky, J. (1986). Infant day care: A cause for concern? *Zero to Three, 6,* 1–19.

Belsky, J. (1988). The "effects" of infant day care reconsidered. *Early Childhood Research Quarterly, 3,* 235–272.

Belsky, J., & Rovine, M. J. (1988). Nonmaternal care in the first year of life and the security of infant–parent attachment. *Child Development, 59,* 157–167.

Belsky J., & Steinberg, L. D. (1978). The effects of day care: A critical review. *Child Development, 49,* 929–949.

Clarke-Stewart, K. A. (1989). Infant day care: Maligned or malignant? *American Psychologist, 44,* 266–273.

Clarke-Stewart, K. A., Allhusen, V. D., & Clements, D. C. (1998). Nonparental caregiving. In M. H. Bornstein (Ed.), *Handbook of parenting, Vol 3: Status and social conditions of parenting* (pp. 151–176). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Clarke-Stewart, K. A., & Fein, G. G. (1983). Early childhood programs. In P. H. Mussen (Ed.), *Handbook of child psychology: Vol. 2: Infancy and developmental psychobiology* (4th ed., pp. 917–999). New York: Wiley.

Etaugh, C. (1980). Effects of nonmaternal care on children: Research evidence and popular views. *American Psychologist, 35,* 309–319.

Etaugh, C. (1993). Maternal employment: Effects on children. In J. Frankel (Ed.), *The employed mother and the family context* (pp. 68–88). New York: Springer.

Hilgard, E. R., Atkinson, R. C., & Atkinson, R. L. (1975). *Introduction to psychology* (6th ed.). New York: Harcourt Brace.

Hoffman, L. W. (1989). Effects of maternal employment in the two-parent family. *American Psychologist, 44,* 283–292.

Scarr, S. (1984). *Mother care/other care.* New York: Basic Books.

Scarr, S. (1998). Why child care has little impact on most children's development. *Current Directions in Psychological Science, 6,* 143–148.

Scarr, S., & Eisenberg, M. (1993). Child care research: Issues, perspectives, and results. *Annual Review of Psychology, 44,* 613–644.

U. S. Bureau of the Census. (1997). *Statistical abstract of the United States* (117th ed.). Washington, DC: U.S. Government Printing Office.

Notes

1. Parts of this article were presented at the 1993 meeting of the Society for Research in Child Development in New Orleans, LA and the 1997 meeting of the American Psychological Association in Chicago.
2. Send correspondence and requests for the list of the introductory textbooks surveyed to Claire Etaugh, Department of Psychology, 115 Bradley Hall, Bradley University, Peoria, IL 61625; e-mail: cetaugh@bradley.bradley.edu.

Students Do Not Overestimate Their Life Expectancy: An Alternative Demonstration of Unique Invulnerability

Marie Helweg-Larsen
Transylvania University

Snyder (1997) offered a demonstration of unique invulnerability (i.e., optimistic bias) in which students overestimated their projected life expectancy. However, comparison of Snyder's data with actuarial data for his participants reveals no evidence of an optimistic bias. In this study, students are asked to estimate their life expectancy after being provided with no information, the information Snyder's students were given, or the actual average life expectancy. Students are consistently accurate in their life expectancy estimates. I describe an alternative classroom demonstration of unique invulnerability.

The *optimistic bias* (also called *unrealistic optimism* or *unique invulnerability*) refers to people's tendency to think their risk

is less than that of their peers. It is a remarkably resilient phenomenon that researchers have investigated extensively (Weinstein & Klein, 1996). Because many risks are multifaceted and uncertain, it is difficult to know if a given person is unrealistically optimistic. Therefore, this research typically examines people's responses at the group rather than the individual level. For instance, if students as a group believe they are less at risk than the typical student, then the group is exhibiting an optimistic bias.

Snyder (1997) suggested a class demonstration of this phenomenon. In his study, graduate students estimated their expected life span and then compared the average estimates with the actuarial life span (75 years old). He concluded that students significantly overestimated their life expectancy. However, for this exercise to demonstrate an optimistic bias, one must compare the estimates with the actual average life span for this particular group. Demographic factors heavily influence life expectancy (Wilkinson, 1986). First, socioeconomic status, as measured by level of education, income, or occupational status, influences life expectancy (Rogot, Sorlie, & Johnson, 1992). For example, a 25-year-old White female high school graduate has a life expectancy of 75.2 years old, whereas a 25-year-old White woman with postcollege education has a life expectancy of 79.5 years old (Rogot et al., 1992). Second, the age of measurement influences life expectancy. Life expectancy at birth is shorter than life expectancy at 25 years of age. The simple reason is that adults have already survived childhood, and their total life expectancy is therefore longer. For example, a White male's life expectancy at birth is 70.7 years (Singh, Kochanek, & MacDorman, 1996), but a White man's life expectancy at age 65 is 80.8 years old (Rogot et al., 1992).

In Study 1, Snyder (1997) found that women estimated living 83.4 years (the sample of men was too small to analyze separately). A 25-year old White woman with postcollege education has a life expectancy of 84.4 years old (Rogot et al., 1992). Thus, there was no evidence of the optimistic bias. In Study 2, the men estimated living 80.8 years and women 85.0 years. The life expectancy for White 25-year-olds with postcollege education is 79.5 years old for men and 84.4 years old for women (Rogot et al., 1992). It appears that these students were quite accurate in their assessments.

Before students made their estimates, Snyder (1997) announced that the actual life expectancy is 75 years old. It is possible that this number anchored student's estimates (Tversky & Kahneman, 1974), and that students simply estimated above this number in order to feel good. That is, it is possible that students would give different (and possibly optimistic) estimates if they received either no information or correct information about the average life expectancy. To test this possibility, undergraduate psychology students estimated their life expectancy after getting no information, the information Snyder's students received (a 75-year average life expectancy), or the actual average life expectancy for this group (78 years old for men, 83 years old for women). All the actuarial comparison figures used in this article are probably underestimates of the actual life expectancy, which in the most recent numbers from 1996 was 76.1 years old at birth ("U.S. Infant Mortality Rate," 1997).

Method

Participants

Students from undergraduate psychology courses at the University of Florida participated (63 men, 137 women). Their average age was 20 years old. I used data only from White participants because detailed actuarial statistics computed by age and educational level were available only for Whites.

Materials and Procedure

Students recorded their gender, age, ethnicity, and estimated age of death. Students (a) received no information prior to making their estimates, (b) read before making their estimates that "the average age of death for U.S. citizens (for men and women combined) is 75 years," or (c) that "the average age of death for U.S. citizens is 78 for men and 83 for women." These are the 1985 averages for White 25-year-old individuals who had a college degree (Rogot et al., 1992).

No statistics were available for 20-year-old college-educated individuals, but it is unlikely that the 5 years difference would change life expectancy estimates dramatically. For example, comparing the life expectancy for 25- and 45-year-old college-educated individuals revealed less than 1 year gained by surviving an additional 20 years (Rogot et al., 1992).

Results

To explore the extent to which the information provided influenced students' life expectancy estimates, a 2 (gender) $\times$ 3 (type of information) ANOVA was conducted (see Table 1). Results revealed a marginally significant main effect of gender, $F(1, 194) = 3.51$, $p = .06$, such that women gave marginally higher life expectancy estimates ($M = 82.3$, $SD = 11.1$) than men ($M = 78.8$, $SD = 14.9$). However, the main effect was qualified by a significant interaction between gender and information type, $F(2, 194) = 3.46$, $p < .05$. Men made lower estimates than women when informed of their actuarial age of 78 years old, $t(65) = 2.92$, $p < .005$, whereas men and women did not differ in their estimates in the first, $t(64) = 1.00$, *ns*, or the second condition, $t(65) = 0.57$, *ns*.

This interaction is interesting and merits further study. However, these data show no evidence to suggest that Snyder's (1997) students gave accurate estimates because they anchored their estimates around 75 years old. It is possible that men gave lower estimates than women when provided with their actual life expectancy because men are not fully aware of how much lower their life expectancy really is. When provided with the actual figure they gave lower estimates.

Students were also accurate about their life expectancy. Both men and women estimated their life span at approximately their actuarial age. The *t* tests comparing each group to the correct average (78.3 years old for men and 83.3 years

Table 1. Life Expectancy Estimates as a Function of Gender and Information Provided

	Men			Women		
	M	*SD*	*n*	*M*	*SD*	*n*
No information	82.9	18.0	20	80.7	11.9	47
The average life expectancy is 75 years old	80.1	11.5	21	82.6	8.5	45
The average life expectancy is 78 years old (men) and 83 years old (women)	73.8	14.0	22	83.6	12.4	45
Overall	78.8	14.9	63	82.3	11.1	137

Note. Men's estimates were not significantly different from the actuarial life expectancy of 78.3 years old for any of the three conditions for overall (*t*s = 1.13, 0.70, −1.52, 0.24, respectively). Women's estimates were also not significantly different from the actuarial life expectancy of 83.3 years old (*t*s = −1.48, −0.57, 0.16, −1.08, respectively).

for women) revealed that no groups significantly overestimated their life expectancy (see Table 1).

Discussion

Optimistic biases are remarkably pervasive and are easily demonstrated in the classroom. However, life expectancy appears to be one area where people are not optimistically biased. A more reliable method for demonstrating the optimistic bias is to select one negative event and ask students to write down the answers to two questions: "On a scale from 0 to 100%, what is the chance that you one day will get [risk/disease]?" and "On a scale from 0 to 100%, what is the chance that the average student of your age and sex at [your university] one day will get [risk/disease]?" Then ask the students to raise their hands if they put a lower number for themselves than for the average student. Most students will estimate their own chances as lower. Helweg-Larsen (1997) found that 89% estimated their own chances as lower than the typical student for having (or causing) an unplanned pregnancy, 95% for getting a sexually transmitted disease, and 90% for getting HIV. The procedure works for any number of negative events or diseases (e.g., divorce, homelessness, cancer, heart attack, being killed in a car accident). Events perceived as controllable (such as divorce or HIV) typically elicit more optimistic bias than events seen as relatively uncontrollable (e.g., catching a cold or getting sick from air pollution; Harris, 1996).

When doing this demonstration, some students may feel adamant about defending their individual judgments. It is important to note that they may be accurate in their estimates. The demonstration shows only that some people are optimistically biased, not who. Clearly some people have less than average risk—the bias springs from the fact that few people seem to be willing to claim greater than average risk. Optimistic biases are common, although apparently not in the domain of life expectancy estimation.

References

Harris, P. (1996). Sufficient grounds for optimism?: The relationship between perceived controllability and optimistic bias. *Journal of Social and Clinical Psychology, 15,* 9–52.

Helweg-Larsen, M. (1994). Why it won't happen to me: A cross-cultural investigation of social comparison as a cause of the optimistic bias. (Doctoral disseration, University of California, Los Angeles, 1994). *Dissertation Abstracts International, 55–11B,* 5124.

Rogot, E., Sorlie, P. D., & Johnson, N. J. (1992). Life expectancy by employment status, income, and education in the national longitudinal mortality study. *Public Health Reports, 107,* 457–460.

Singh, G. K., Kochanek, K. D., & MacDorman, M. F. (1996). Advance report of final mortality statistics. *Monthly vital statistics report, 45*(Suppl. 3). Hyattsville, MD: National Center for Health Statistics.

Snyder, C. R. (1997). Unique invulnerability: A classroom demonstration in estimating personal mortality. *Teaching of Psychology, 24,* 197–199.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 195,* 1124–1131.

U.S. infant mortality rate reaches all-time low. (1997, December 2). *The Gainesville Sun,* p. 12A.

Weinstein, N. D., & Klein, W. M. (1996). Unrealistic optimism: Present and future. *Journal of Social and Clinical Psychology, 15,* 1–8.

Wilkinson, R. G. (1986). Socio-economic differences in mortality: Interpreting the data on their size and trends. In R. G. Wilkinson (Ed.), *Class and health: Research and longitudinal data* (pp. 1–20). London: Tavistock.

Notes

1. I am grateful to James Shepperd for his input on this article.

2. Send correspondence to Marie Helweg-Larsen, Department of Psychology, Transylvania University, 300 North Broadway, Lexington, KY 40508-1797; e-mail: mhelweglarsen@mail.transy.edu.

Unique Invulnerability As Applied to Personal Mortality: The Reports of Its Demise Are Exaggerated

C. R. Snyder
University of Kansas, Lawrence

Additional relevant data and literature support the biased processing of negative self-referential information. A new exercise involves a student first writing, on a note card, the average age of death in that student's family, followed by his or her own estimated age of death. The instructor then asks students to raise their hands if their age of death is higher than the family average, thereby allowing a vivid test of the unique invulnerability process. Teachers can try