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Douglas A. Hershey & Joy M. Jacobs-Lawson

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Bridging the Gap: Anticipated Shortfalls in Future Retirement Income

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Abstract Determining an appropriate and desirable income replacement rate is one of the keys to developing a successful personal financial plan for retirement. In the present investigation, we examined workers' expectations of the pre-retirement income they believed would be necessary in order to have a "good" retirement relative to the income they anticipated they would receive. Analyses revealed an expected income shortfall, the magnitude of which was positively related to one's income and age. Sex was also related to the magnitude of the expected shortfall, with women anticipating a larger financial discrepancy than men. Finally, a sex by marital status interaction emerged in which single women were found to have a larger shortfall than single men and married individuals of both sexes. Findings are discussed in terms of the importance of interventions aimed at educating workers to understand the value of selecting a reasonable retirement income replacement rate.

Keywords Retirement · Income · Replacement rate · Sex difference · Income shortfall

Introduction

Selecting an appropriate retirement income rate is one of the keys to establishing a sound personal financial savings plan. A replacement rate is defined as the amount of income one expects to receive in retirement, expressed as a percentage of one's income immediately prior to retirement. So for example, imagine an individual with an income of \$80,000 a year just prior to retirement, whose income is reduced to \$60,000 upon retiring. That person would be said to have a 75% replacement rate. From an applied perspective, replacement rates are an important topic of investigation because they are positively correlated with levels of retirement satisfaction (Munnell 2005) and by extension, quality of life. Moreover, setting clear and specific financial goals and choosing a realistic replacement rate may have the added benefit of leading to reductions in financial worry (e.g., MacEwen et al. 1995).

Historical reports, cross-cultural comparisons and cohort-based analyses of retirement income replacement rates have appeared in the literature (Alford et al. 2004; Burkhauser et al. 2005; OECD 2005; VanDerhei 2004; Wolff 2006), as have studies that project optimal future replacement rates based on historical trends (Smith 2003; VanDerhei 2006). We were unable to find research in the psychological or economic literatures, however, that has examined replacement rates from a perceptual perspective. In this investigation we examined workers' self-reports of (a) the replacement rate they *expect to need* to maintain a reasonable retirement standard of living, (b) the replacement rate they *expect to receive* when they retire (which may differ from what they expect to need), and (c) the calculated difference between these values, hereafter referred to as a *replacement rate discrepancy*.

D. A. Hershey (✉)
Department of Psychology, Oklahoma State University,
Stillwater, OK 74078, USA
e-mail: douglas.hershey@okstate.edu

J. M. Jacobs-Lawson
Graduate Center for Gerontology, University of Kentucky,
306 Wethington Health Sciences Bldg., 900 S. Limestone,
Lexington, KY 40506, USA
e-mail: jjaco4@email.uky.edu

Establishing a realistic replacement rate is a routine, yet critical, part of the financial planning process, and something that is ordinarily discussed during an initial consultation with any professional financial advisor. In order to maintain one's standard of living in retirement, most American financial advisors recommend a replacement rate in the 70–80% range (Reno and Lavery 2007). Although no single heuristic for replacement rate income will be perfectly suitable for all pre-retirees, for *most* individuals a replacement rate of 75% is sufficient because many pre-retirement categories of expenditures disappear or are significantly reduced upon retiring, such as commuting costs, clothing, income and Social Security taxes, and retirement savings allocations. These reductions are offset, to some degree, by increases in medical costs, health insurance premiums, recreational costs, and entertainment expenses. Nevertheless, for most individuals, a replacement rate of less than 100% is sufficient (Andrews 1993; Munnell and Soto 2005; Palmer 1989).

Once an income replacement rate is established, it is used in combination with the best available information about future pension and Social Security benefits to determine how much one should (ideally) save for retirement. Although conceptual limitations with replacement rates have been pointed out (Biggs and Springstead 2008; Schieber 1995), they are important inasmuch as they serve as a cornerstone of nearly all long-range personal financial plans, they reflect important information about the nature and magnitude of individuals' financial goals and aspirations, and they structure ongoing progress decisions (Beach 1998) about the adequacy of one's planning and saving efforts. On the basis of these considerations, replacement rates are clearly worthy of empirical investigation.

The psychological and economic literatures suggest there are good reasons to believe individuals' perceptions of needed and expected retirement income serve as precursors to retirement saving decisions. Bearing in mind that fewer than half of all Americans have attempted to calculate exactly how much they should save for retirement (Helman et al. 2010), most have a tacit sense of where they stand in terms of the personal economic long haul. It is this tacit sense, derived from *perceptions* of one's future financial needs and expectations (as opposed to computations), which serve to establish a mindset for the magnitude of the saving task at hand (Malone et al. 2010). But where does this "tacit sense" come from? It has been suggested that rather than reliance on extensive actuarial computations, individuals use heuristics or "rules of thumb" to judge the adequacy of their future retirement income (Bernheim et al. 2001). Perceptions of future need are judged in relation to the match between individuals' current lifestyle and expectations of what life will be like after leaving the workforce (Hershey et al. 2002). Expectations

of retirement income, in contrast, seem largely based on financial information provided by employers and government sources (Dominitz et al. 2002; Junk et al. 1997), messages from the media, professional financial advisors, personal acquaintances, banks, and the internet (Kim and Kim 2010), and feedback regarding the performance of existing investments (Clark-Murphy et al. 2009). Expectations of both future financial income streams and resource needs are influenced by not only an individual's personality characteristics (Hershey and Mowen 2000), but also how one perceives the uncertainty associated with the financial planning process (Fisher and Montalto 2011; Shuey 2004).

Understanding biases in individuals' expectations of replacement rates (and replacement rate discrepancies) is important because, as pointed out above, these rates are the foundation upon which savings goals should (ideally) be based. Moreover, it is a topic upon which few workers receive formal training or professional assistance; indeed, most are left to their own devices when it comes to estimating how much retirement income they will need. Popular web-based retirement saving calculators routinely request users to enter a replacement rate value, but many fail to provide reasonable "environmental support" (Craik 1994) as to what that rate should be, or how it should be individually tailored. Some financial calculators even take the replacement rate decision out of the hands of planners by applying a default replacement rate for all those who use the system. Given the critical nature of this financial planning decision, it is surprising that so little empirical work has been published on this topic.

Actuarial studies have shown that income replacement rates typically differ as a function of one's sex and pre-retirement income (Alford et al. 2004). Because women generally live longer than men and, on average, have lower incomes over the course of their lives, they can expect to need a somewhat larger income replacement rate. Using data from the 2004 Aon Consulting/Georgia State University replacement rate study, Alford et al. made the argument that low income individuals¹ (\$20,000 annual earnings) typically needed a replacement rate of 89% to maintain an adequate income, those earning \$60,000 annually needed a replacement rate of roughly 75%, and those earning \$150,000 per year needed a replacement rate of 85%. This somewhat counterintuitive U-shaped function stems from the fact that lower income individuals generally save the least and pay the least in taxes (as a percentage of income) before retirement—an effect that decreases as

¹ This scenario assumes one wage earner who is 65 years of age with a spouse who is 3 years younger (therefore, the family unit would be eligible for family Social Security benefits).

income increases (up to \$60,000). After \$60,000, however, replacement rates tend to increase, because post-retirement taxes increase as income increases (see Alford et al. 2004 for a more thorough discussion of this phenomenon). It is unclear whether individuals appreciate the role of income and sex when determining a replacement rate on their own (i.e., without the help of a financial professional). It has also been shown that financial need in retirement and replacement rates are related to age and marital status (Basu 2005; Butrica and Iams 2003; Munnell and Soto 2005; Yilmazer and Lyons 2010), with most studies focusing on the actual replacement rates of retirees as opposed to pre-retirees' estimates of how much they will need in the future.

The overarching goal of the present study is to examine individuals' expectations of replacement rate values. In doing so, we not only focus on how much retirement income individuals believe they will need (hereafter referred to as one's *needed replacement rate*), but also how much they believe they are likely to receive, and the difference between these values. Although numerous investigations have measured actual retirement income replacement rates, the present study is unique by setting as its focus perceived replacement rates (both needed and anticipated). We believe that these two perceptually-based indicators serve as psychological precursors to a number of important retirement saving decisions. Therefore, we view findings from this psychological investigation as complementary to the results arrived at by economists and those who work in the field of finance.

In the present study we address the following three research questions:

1. How aware are individuals that they will need to have some 70–80% of their pre-retirement income to maintain a reasonable standard of living in old age?
2. How sensitive are individuals to the way income is related to replacement rate values?
3. To what extent are replacement rate discrepancies related to individual difference variables such as income, age, sex, and marital status?

Design and Methods

Participants

A total of 627 individuals participated in the study (313 men; 314 women). At the time of testing, none of the participants indicated they were retired. All respondents were sampled from public places (e.g., libraries, community group meetings) in the north central Oklahoma area. The average age of the sample was 43.19 years

($SD = 11.93$, min. = 25, max. = 64), the mean household income was \$67,423 ($SD = \$35,900$, min. = \$15,000, max. $\geq \$150,000$, median = \$65,000), and respondents had completed 16.07 years of formal education on average ($SD = 2.40$, min. = 10, max. = 19). Just over half of participants were married (57.3%); the remaining individuals were single, widowed, or divorced. Compared to U.S. Census Bureau data, the sample was somewhat more highly educated and had higher incomes than the national average. Age was trichotomized for analysis purposes into younger (age 25–37), middle-aged (age 38–51), and older workers (age 52–64). Income was trichotomized into low (\$0–39,999), moderate (\$40,000–79,999), and high (greater than \$80,000) levels, with splits being determined on the basis of the actual frequency distribution of the sample. Therefore, approximately one-third of respondents were sorted into each of the three income groups. Finally, the marital status dimension was collapsed into two categories: married and unmarried.

Questionnaire and Measures

The variables used in this study were drawn from a larger investigation that focused on the psychological motives that underlie retirement planning practices. Of particular relevance to this study were the following two questions: (a) *Imagine your annual income just before you retire. What percentage of that annual amount do you think you would need in order to have a good retirement income?* And (b) *What percentage of your annual income just prior to retirement do you expect to receive after you retire?* The difference between these two values—the *replacement rate discrepancy*—represents the third dependent measure in this investigation. Negative values on this dimension indicate expectations of a retirement income shortfall (that is, in which the value of one's needed replacement rate exceeds the anticipated replacement rate), positive values represent a perceived income surplus (in which the anticipated replacement rate exceeds the needed rate), and zero (or near zero) values indicate a good match between one's anticipated retirement income and expenditures (suggesting little or no difference between needed and anticipated replacement rates). In addition to these measures, each participant completed a demographic profile that contained questions measuring age, sex, income, and educational level.

Results

The analysis process began by inspecting all distributions for evidence of skew, kurtosis, outliers, and other distorting properties that might violate the standard assumptions of general linear model inferential statistics. All distributions were found to be reasonable in this regard.

Analysis Plan

The primary analyses involved examining the needed and anticipated replacement rates as well as the replacement rate discrepancy through the use of three separate analysis of variance (ANOVA) models. One motive for using ANOVA was that two of the three independent variables (sex and marital status) were already of a categorical nature. A second motive stemmed from the fact that by trichotomizing the age dimension, we were able to create three easily recognizable subgroups of adults (young, middle-aged, and old) that are commonly discussed in the developmental literature and allowed us to target the findings toward specific and distinct age groups. Post hoc tests (Tukey's) and simple effects analyses were used, as appropriate, following statistically significant *F*-tests, and omnibus ANOVA findings for the three primary analyses are summarized in Table 1.

Needed Replacement Rates

The first set of analyses examined the needed replacement rates for members of the sample. The mean needed rate among all participants was 64.0% (*SD* = 24.61), a rate that

is 11.0 percentage points lower than the 75% "adequacy value" most financial professionals recommend. A single-group *t*-test revealed that the perceived needed value of 64.0% was significantly lower than the normative rate, $t(628) = 11.16, p < .01$.

A four-way analysis of variance (ANOVA) that focused on main effects was computed next that used needed replacement rate scores as the dependent measure and age (young, middle age, old), sex (men, women), income (low, moderate, high), and marital status (married, unmarried) as the independent variables. Higher-order interactions were not considered in this analysis given the large number of factors and levels within factors. Significant effects were revealed for age ($F[2, 620] = 12.93, p < .01$), sex ($F[1, 620] = 6.00, p = .02$), and income ($F[2, 620] = 3.87, p = .02$). The effect for marital status was not significant ($F[1, 620] = 2.41, ns$). The mean needed replacement rate increased as a function of age (young = 58.0%; middle age = 64.5%; old = 70.9%); men (61.4%) indicated they would need less than women (66.7%); and income formed somewhat of an inverted U-shaped relation with anticipated need (low = 60.9%; moderate = 67.2; high = 63.0%). Post hoc comparisons using the Tukey HSD test for age revealed significant differences between the young and middle-age groups ($p < .05$), the middle-age and old

Table 1 ANOVA summary tables for needed, anticipated, and discrepancy replacement rates

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i> -level
Needed replacement rate					
Age	14720.66	2	7360.33	12.93	.01
Sex	3413.74	1	3413.74	6.00	.02
Income	4410.60	2	2205.30	3.87	.02
Marital status	1369.87	1	1369.87	2.40	.12
Error	352920.52	620	569.23	–	–
Total	2948742.75	627	–	–	–
Anticipated replacement rate					
Age	5375.69	2	2687.84	4.74	.01
Sex	3984.49	1	3984.49	7.03	.01
Income	5383.39	2	2691.70	4.75	.01
Marital status	423.10	1	423.10	.76	.38
Error	351424.39	620	566.81	–	–
Total	2311699.50	627	–	–	–
Replacement rate discrepancy					
Covariate (Income)	12821.61	1	12821.61	23.52	.01
Age (A)	6928.72	2	3464.36	6.36	.01
Sex (S)	12966.58	1	12966.58	23.79	.01
Marital status (M)	566.48	1	566.48	1.04	.31
A × S	1393.53	2	696.77	1.28	.28
A × M	1650.36	2	825.18	1.51	.22
S × M	2442.47	1	2442.47	4.48	.04
A × S × M	1090.93	2	545.47	1.00	.37
Error	334679.15	614	545.08	–	–
Total	421179.75	627	–	–	–

groups ($p < .05$), and the young and old groups ($p < .01$). Tukey's comparisons for income revealed a difference between the low income and moderate income groups ($p < .05$).

Anticipated Replacement Rates

How much income did individuals *anticipate* they would receive after leaving the workforce? Across all participants, the anticipated replacement rate was 55.6% ($SD = 24.51$), some 8.4% less than what they believe they needed and 19.4% lower than the adequacy value espoused by financial planning professionals.

A four-way main effects ANOVA for anticipated replacement rate was computed, which parallels the ANOVA analysis reported above. The predictors in the model were age, sex, income, and marital status. Significant main effects were revealed for age ($F[2, 620] = 4.74$, $p < .01$), sex ($F[1, 620] = 7.03$, $p < .01$), and income ($F[2, 620] = 4.75$, $p < .01$). The effect for marital status failed to emerge ($F[1, 620] = .76$, *ns*). As a function of age, the mean anticipated replacement rate was: young = 52.6%, middle age = 54.0%, and old = 60.8%. Men (58.1%) indicated they expected to receive more than women (53.1%), and the anticipated replacement rate increased as a function of income (low = 48.3%; moderate = 57.3%; high = 59.5%). Post hoc comparisons using the Tukey HSD test for age revealed significant differences between the young and old age groups ($p < .01$), as well as the middle-age and old groups ($p < .05$). Tukey's comparisons for income level revealed an effect between the low and moderate groups ($p < .01$), and the low and high groups ($p < .01$).

Income and Replacement Rates

In light of the relationship between income and replacement rates outlined in Alford et al. (2004), we next sought to determine whether individuals' estimates of retirement income need were sensitive to current income levels. Recall that Alford et al. argued that low- and high-income pre-retirees generally need higher replacement rates than moderate-income individuals. The dashed line in Fig. 1 shows income adequacy rates for three different income groups from the Alford study. These values represent a non-linear relationship between one's current (employment) income and optimal replacement rate values. The anticipated retirement need data from the present investigation, which were plotted in three income categories designed to correspond to the Alford et al. amounts, are also clearly non-linear with respect to income. However, the data from this study reveal a pattern that is the *opposite* of what one would expect based on the Alford et al.

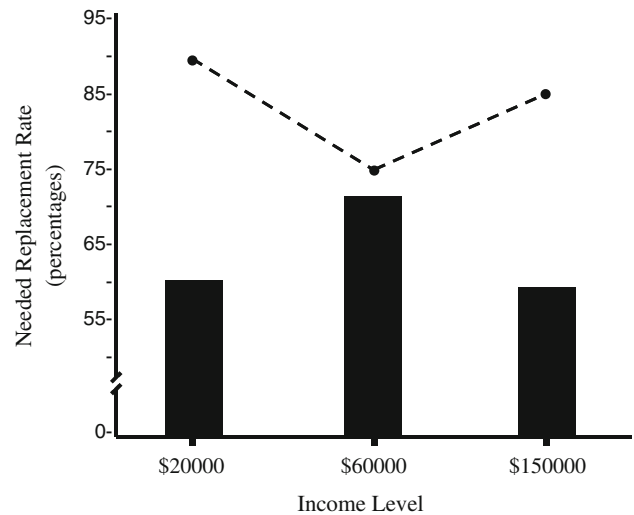


Fig. 1 Suggested replacement rates at three levels of income based on the Alford et al. (2004) data (dashed line), and anticipated replacement rate data taken from the present investigation (shown by the three bars)

findings. Individuals in the lowest and highest income groups (corresponding to \$20,000 and over \$150,000 per year, respectively) reported needing significantly *lower* (not *higher*) replacement rates relative to their moderate-income counterparts. To verify the non-linearity of the observed effect, a one-way ANOVA was calculated that revealed a non-significant linear component ($F[1, 626] = .78$, *ns*) and a significant quadratic component ($F[1, 626] = 7.18$, $p < .01$). Clearly, the pattern of anticipated need runs contrary to what would be expected based on the recommendations contained in the Alford et al. (2004) report.

Replacement Rate Discrepancy Analysis

Next, we turn our attention to the discrepancy between anticipated replacement rates and individuals' estimates of needed replacement rates. The mean discrepancy value for the sample (-8.4% , $SD = 24.0\%$) was compared to a value of 0 using a single group *t* test. The outcome of this test was statistically significant ($t [628] = -8.64$, $p = .01$), which means that participants' anticipated replacement rate (55.6%) was significantly smaller than their needed replacement rate (64.1%).

In the final set of analyses, we sought to determine whether three individual difference variables—age, sex, and marital status—were related to replacement rate discrepancies. Toward this end, a 3 (age: young, middle age, old) \times 2 (sex: female, male) \times 2 (marital status: married, unmarried) analysis of covariance (ANCOVA) was

computed that used income as the covariate.² In addition to main effects, three two-way and one three-way interaction terms were estimated. Not unexpectedly, the covariate was found to be statistically significant, $F(1, 614) = 23.52$, $p < .01$. Main effects of age and sex also emerged ($F[2, 614] = 6.36$, $p < .01$ and $F[1, 614] = 23.79$, $p < .01$, respectively), as did a significant sex by marital status interaction ($F(1, 614) = 4.48$, $p = .04$). The three-way interaction failed to emerge. With regard to main effects, women anticipated a greater financial shortfall than men, as expressed in terms of replacement rate discrepancy scores (means of -13.6% vs. -3.3% , respectively) and post hoc follow up tests revealed that the projected shortfalls of middle-aged (-10.4%) and older individuals (-10.1%) were significantly larger ($p < .05$) than those of their younger counterparts (-5.4%). These main effects, however, were overshadowed by the significant two-way interaction.

Simple effects analysis of the sex by marital status interaction indicated that replacement rate discrepancy values differed as a function of sex for respondents who were unmarried, $F(1, 622) = 27.06$, $p < .01$, with unmarried men showing a -1.9% discrepancy and unmarried women showing a -17.3% discrepancy—a striking 15.4 percentage point difference. Although smaller in magnitude, sex differences also emerged among married individuals, $F(1, 622) = 6.58$, $p < .05$, with married men showing a -4.2% discrepancy and married women showing a -10.5% discrepancy—a 6.3% difference.

The relationship among replacement rates and the three predictor variables are graphically illustrated in Fig. 2. Each of the four panels in the figure show estimates of needed replacement rate values (*the top lines*) and anticipated replacement rates (*the bottom lines*) represented as a function of age, sex, and marital status. For presentation purposes, the age dimension has been sub-divided into five categories, which correspond to individuals at five different points in the adult life span (i.e., individuals in their 20s, 30s, 40s, 50s, and 60s).³ The gray shaded portions of the

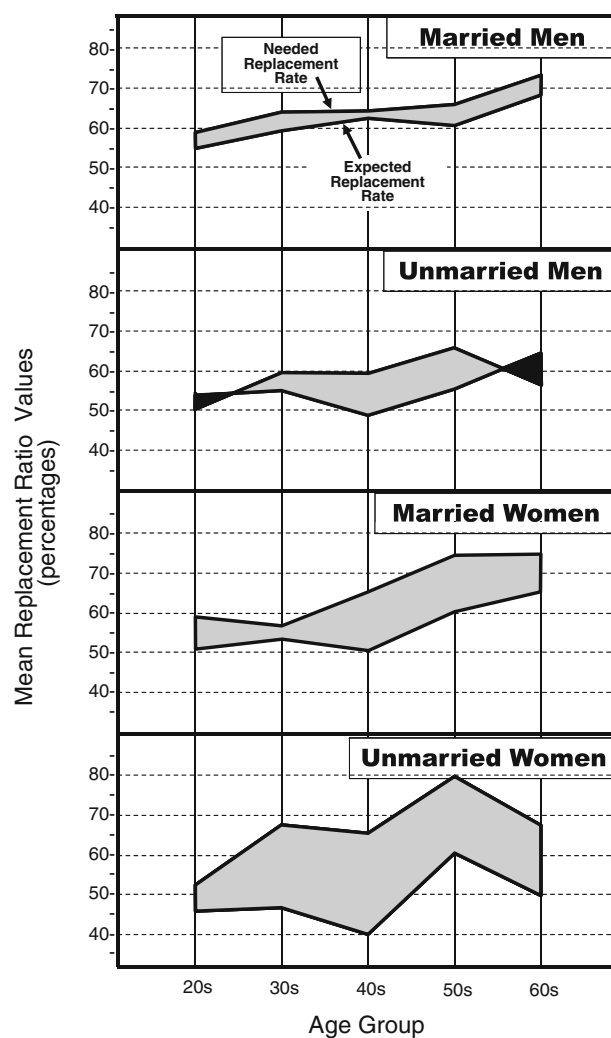


Fig. 2 Mean perceptions of needed (*top lines*) and anticipated (*bottom lines*) retirement income replacement rates, shown as a function of age, sex, and marital status. The gray shaded portion of each figure represents an anticipated income shortfall. Income surpluses (*shaded in black*) were only observed among unmarried men in their 20s and 60s

four figures represent the magnitude of the replacement rate discrepancy. These data illustrate clear differences in the magnitude of replacement rate discrepancies for different subgroups of individuals.

Discussion

Two important findings emerged that provide insights into how different types of individuals think about their financial futures. The first is that American working adults expect significantly less income than they believe they will need to achieve a reasonable standard of living in retirement. This finding is troubling as it suggests that many individuals will encounter a retirement standard of living

² As pointed out in VanDerhei (2004), it is important to control for income when examining replacement rates as different socioeconomic groups typically require different amounts of replacement income during retirement. Therefore, in this analysis, income (as a continuous variable) was covaried out of the replacement rate discrepancy scores.

³ The descriptive replacement rate data shown in Fig. 2 are plotted over 5 different decades of adulthood, as opposed to the 3 age categories used in the statistical tests. This more finely-grained depiction of the age dimension resulted in a smoother developmental function, which better visually illustrates the relationship between age, sex and marital status. An alternative figure based on 3 age groups was first considered before deciding to show the data as a function of 5 decades; however, we found the latter configuration to be more revealing, while at the same time not causing the data to become distorted.

that is less than what they would have hoped for themselves. The second finding, which is in some respects equally troubling, is that the income level respondents expect to receive is substantially less than what financial professionals consider adequate. Again, this points to the notion that future retirement income streams are perceived to be insufficient. The bottom line is that when participants in this study envisioned their retirement income stream, they projected sizable shortfalls.

The fact that many Americans enter retirement with insufficient sources of income is a well-established finding in the finance and economics literatures (Helman et al. 2010; Lusardi and Mitchell 2005; VanDerhei 2011). The data from this investigation suggest that individuals are acutely aware of this fact. What is not known, however, is the psychological impact of realizing that an income shortfall looms on the horizon. For some, this awareness might serve as a motivating force—one that stimulates workers to set aside discretionary resources for the future. For others, however, the anticipation of not being able to meet one's future obligations could lead to the onset of financial concern and retirement worry (Malone et al. 2010; Neukam and Hershey 2003), and more generally what Hayslip et al. (1997) have referred to as “retirement anxiety.”

Turning to the inferential analyses, the observed replacement rate discrepancy data were intriguing when examined as a function of age, sex, and marital status. Looking across the four panels shown in Fig. 2, it is apparent that one of the major stories to emerge from this study involves group differences in the magnitude of discrepancy rates. Relatively small discrepancy scores are seen among married men, which can be compared to the substantial discrepancy scores found among unmarried women. Also of note is that fact that a small anticipated income *surplus* was witnessed among the younger and older unmarried men. What could account for these effects?

Certainly, sex-linked pay differentials (DeNavas-Walt et al. 2008), sex differences in longevity (Litwin 2007), and differences in the continuity of work histories (Rix 1990; Talaga and Beehr 1995), all put women at a disadvantage relative to men when it comes to accumulating pensions and retirement savings. This helps to explain why such a clear sex effect emerged: women were aware that they face a disproportionate income deficit and their estimates reflect this fact. This was perhaps compounded, in part, by the fact that some men might have underestimated their future income needs (e.g., single men in their 20s expect to need only 53.5% of their pre-retirement income). The multidimensionality of sex effects in this study was brought into clear relief when the simple effects analysis of discrepancy scores was carried out on subgroups of married and

unmarried men and women. In terms of perceived future income shortfalls, unmarried women appear to be at a far greater disadvantage than married women or men. The age-based finding that older and middle-aged individuals had significantly larger discrepancy rates than younger workers suggests that members of the older groups may have more realistic perceptions of the magnitude of their future retirement income. Future pension optimism by younger respondents may have magnified this effect, in addition to a low perceived retirement need relative to members of other age groups.

The data also revealed an odd asymmetry regarding respondents' expectations of the relationship between income and replacement rates. Moderate-income individuals (i.e., those with incomes around \$60,000) appeared to be fairly well calibrated when it came to estimating needed replacement rates. Low- and high-income workers expectations were rather skewed, however, with both groups underestimating their income need by some 25–30 percentage points (i.e., relative to the needed rates projected by Alford et al.). And although it is acknowledged that the Alford et al. suggested income replacement rate of 75 percent is merely a recommendation, this finding suggests that some form of intervention is in order to make individuals aware of what an acceptable replacement rate might be, particularly for those in the low- and high-income groups. Also worthwhile would be follow-up investigations designed to probe for the root causes of this perceptual bias among those in these two disparate income groups.

This study is not without its limitations. One limitation is that it is unclear whether systematic perceptual biases were associated with estimates of one's needed or anticipated future income, and if such biases did exist, how they may have affected the findings. Future studies might profitably examine the possibility of perceptual biases associated with the main dependent variables in this investigation. This investigation was also potentially biased due to the fact that the sample was not geographically representative. That is, the financial expectations of a nationally representative sample might differ in some unknown way from those of the Oklahomans who participated in this study. Finally, it may be the case that the task of estimating a replacement rate for a survey might introduce certain biases that are not present when one is actually deciding upon a replacement rate as part of the financial planning process. That is, some of our respondents' estimates might have differed had they had a longer period of time to reflect on their retirement goals, consult with a financial planning professional, or work through various hypothetical financial scenarios. Thus, it would be advisable to replicate the findings from this study using a more comprehensive financial planning task, perhaps one that

requires respondents to use a retirement savings calculator to establish a personal retirement saving plan.

In evaluating the overall adequacy of this study, we see the potential benefit of conducting future investigations that replicate and extend the present findings by exploring other independent variables. Specifically, it might be advantageous to examine the extent to which variables such as health status and income adequacy (as opposed to income) covary with replacement rate expectations, and the extent to which psychological indicators such as risk tolerance, financial knowledge, and retirement goal clarity structure individuals' perceptions of future resource needs.

The goal of this study was to examine individuals' anticipated financial need in retirement in relation to their anticipated level of income. In doing so, we found the vast majority of workers were biased toward expectations of a retirement income shortfall, which, if realized, would leave many with insufficient funds to maintain a reasonable standard of living in old age. This is one area in which public policy initiatives could have a significant and positive impact on the quality of individuals' lives. Educating workers to plan sensibly over the course of their lifespan should be made a top priority. This would necessarily involve teaching people how to select a sensible replacement rate and encouraging them to establish appropriate saving goals. Particularly valuable would be interventions that stress the differences between pre- and post-retirement expenses and streams of income, and how one can strike a balance between the two in order to prevent a financial shock during the post-employment period. After all, for workers facing uncertain financial futures, there is no substitute for true financial literacy when it comes to formulating a financial blueprint for old age.

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Author Biographies

Douglas A. Hershey is a Professor of Psychology in the Lifespan Developmental Psychology program at Oklahoma State University. He currently serves as Director of the Retirement Planning Research Laboratory. Dr. Hershey's work examines the development of life planning and decision making processes in adults, with a special interest in the cognitive, personality, and economic factors that motivate individuals to plan for the future and save for old age. For the past decade, Professor Hershey has been working on the development of a comprehensive interdisciplinary model of retirement preparation. Hershey is a Fellow of the Gerontological Society of America and the Netherlands Institute for Advanced Studies in The Hague.

Joy M. Jacobs-Lawson is an Assistant Professor in the Graduate Center for Gerontology at the University of Kentucky. Her research focuses on aging and decision making. Specifically, her research has examined: (a) how individuals make retirement planning decisions (b) how personality is related to late-life planning (c) the role of gender and age in decision making, and (d) how knowledge and risk tolerance influence decision making. The topical areas she has pursued include: (a) health insurance decision making (b) retirement saving and investing (c) balancing financial needs and expenditures, and (d) medical decision making.