



# Money, happiness, and aspirations: An experimental study

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## ABSTRACT

The past decade has witnessed an explosion of interest in the scientific study of happiness. Economists, in particular, find that happiness increases in income but decreases in income aspirations, and this work prompts examination of how aspirations form and adapt over time. This paper presents results from the first experimental study of how multiple factors—past payments, social comparisons, and expectations—influence aspiration formation and reported satisfaction. I find that expectations and social comparisons significantly affect reported satisfaction, and that subjects choose to compare themselves with similar subjects when possible. These findings support an aspirations-based theory of happiness.

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## 1. Introduction

The past decade has witnessed an explosion of interest in the scientific study of happiness among both researchers and the general public.<sup>1</sup> At stake for the discipline of economics is the validity of the fundamental premise that “more is better;” at stake for the wider public is the belief that economic growth should be a primary goal of public policies.<sup>2</sup> In numerous studies, economists and others find that an increase in income does increase an individual’s happiness, usually measured as the individual’s subjective assessment of her own happiness or well-being.<sup>3</sup> However, these studies also conclude that an increase in income is accompanied by a rise in consumption aspirations that, over time, works to offset the initial rise in happiness.<sup>4</sup> Thus, although more income is better for happiness temporarily, the question becomes whether or not it is better in the long run.

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<sup>1</sup> Consider, for example, an issue of *Time Magazine* (2005) devoted to the “The Science of Happiness,” numerous popular and academic books (e.g., Argyle, 2001; Frey and Stutzer, 2002a; Van Praag and Ferrer-i-Carbonell, 2004; Layard, 2005; Haidt, 2005), numerous academic articles (see references), special issues or partial issues of academic journals (in economics, *Journal of Economic Behavior and Organization* July 2001; *Economic Journal* November 1997), professional conferences (e.g., the 2006 *Economics of Happiness Symposium* hosted by the University of Southern California and the University of Warwick), and the formation in 2000 of an academic journal devoted solely to the topic (*Journal of Happiness Studies*). See Clark et al. (2008a,b) for a recent review of the economics of happiness literature. McMahan (2006) traces interest in happiness back through time to ancient Greece.

<sup>2</sup> For example, Lane (2000) argues that income maximization should not be a top policy priority, while Stevenson and Wolfers (2008) present evidence that implies raising income is an important policy priority.

<sup>3</sup> Frey and Stutzer (2002b) review the happiness concept and measurement issues. Non-income influences on happiness include health, age, and marital status, as well as sexual activity (Blanchflower and Oswald, 2004).

<sup>4</sup> The articles are too numerous to list individually. The seminal papers are Easterlin (1974, 1995), and a very recent treatment is Clark et al. (2008b). For a general discussion of key issues related to happiness of interest to economists, see Frey and Stutzer (2002a,b).

This question has shifted attention to how income aspirations form and adapt, and three factors have been identified as particularly important. First, an individual's aspiration level depends positively on her past outcomes, such that higher past incomes trigger higher aspirations and lower levels of reported happiness (e.g., McBride, 2001; Di Tella et al., 2003, 2007; Stutzer, 2004). Second, her aspirations depend positively on the outcomes of others in her comparison group, such that an improvement in others' incomes decreases her happiness (e.g., McBride, 2001; Stutzer, 2004; Senik, 2004, 2009; Ferrer-i-Carbonell, 2005; Luttmer, 2005; Graham and Felton, 2006; Knight and Song, 2009). Third, her aspirations depend positively on her expected outcome, such that a higher expected income affects reported happiness.<sup>5</sup>

Can we find evidence of these aspiration factors at work in a well-controlled laboratory environment? It is not clear that experimental subjects will form payoff aspirations in the same manner that individuals form income aspirations. Income depends on hours worked, market forces, and societal institutions, and income aspirations might depend on all of these as well as other societal factors. Subjects in an experiment without these influences might form aspirations in a very different manner. Nonetheless, because the debate about the role of aspirations in the income-happiness relationship continues,<sup>6</sup> experimental evidence of payoff aspirations would support an aspirations-based theory of happiness. Moreover, an experimenter can identify, control, and measure the three mechanisms—past outcomes, social comparisons, and expectations—thought to drive aspirations but difficult to isolate using survey data. Hence, an experiment can determine not only which factors operate but also which factors play the largest role in aspiration formation.

Recognizing the potential for experimental research to contribute to our understanding of happiness, Charness and Grosskopf (2001) conducted an experiment in which a subject controlled another's payoff. They found that most subjects disregard making social comparisons and instead show a preference for efficient and fair outcomes. Other experiments further investigated the relationship between feelings (such as happiness) and other-regarding behavior (e.g., Bosman and von Winden, 2002; Konow, 2010; Konow and Early, 2008). However, these authors were not interested in aspiration formation directly but instead in how comparison effects or emotions influenced strategic behavior and vice versa. Because happiness assessments in their studies are intertwined with choices that determine equity and fairness, it remains to be seen whether their findings apply to a non-strategic setting which more closely mimics the comparisons examined in the income-happiness literature (e.g., you do not alter you neighbor's income). Moreover, the earlier studies do not consider the role of other aspiration factors.

An underlying premise of this paper is that we must separate the impact of aspirations from other strategic considerations in order to study aspiration formation; otherwise, aspirations might not be accurately observed. For example, a subject might in fact care about her relative payoff, but if she greatly fears retaliation, then her observed behavior will not reflect any concern for relative payoff.<sup>7</sup> To avoid this possibility, I design an experiment in which a subject's choice affects her own payoff but not others' payoffs, and which also simultaneously collects data on past payments, social comparisons, and expected payoffs. Individuals play repeated rounds of the "matching pennies" game against various computer opponents who play at announced probability distributions. After being told outcome information for a round, each subject reports her subjective satisfaction with the outcome.

This paper reports multiple findings. First, holding the payoff constant, an increase in aspirations has a negative and statistically significant impact on a subject's reported satisfaction. In other words, there is clear evidence that aspirations affect happiness. Second, the three aspiration factors influence satisfaction to different degrees. Both expected payment and the comparison payment negatively affect reported satisfaction in similar magnitudes, though they are an order of magnitude less than the actual payment. Previous payments have a negligible effect. Third, when making social comparisons with sufficiently detailed information, subjects do not compare themselves with all other subjects but instead compare themselves with those other subjects most similar to themselves. Specifically, they compare themselves with others who faced the same partner-type but not those who faced other partner-types.

These findings support an aspirations-based theory of happiness and pecuniary rewards, and they match certain empirical patterns identified in the income-happiness literature. Payoff satisfaction depends on aspirations which change in response to environmental conditions, particularly expectations and others' outcomes.<sup>8</sup> The one pattern inconsistent with the income-happiness literature is that past payoffs do not prominently impact aspirations. In hindsight, this finding is not surprising because subjects are unlikely to become too accustomed to prior payoffs during the duration of a relatively short experiment. However, it also suggests that the impact of past income and consumption on happiness might be due not to a direct effect of past consumption on aspirations but instead on an indirect effect through expected consumption. Future work should

<sup>5</sup> This mechanism has received relatively little attention in the income-happiness literature by economists (Clark et al., 2008b). See Kahneman (1999) and Frederick and Loewenstein (1999) for larger discussions of adaptation and expectations. The work by Senik (2004, 2008, 2009) suggests a potential relationship between expected future earnings and others' income.

<sup>6</sup> For example, Veenhoven (1991) disputes the claim that happiness is relative, while Easterlin (2001) argues that adaptation makes temporary the impact of an increase of income. The empirical evidence remains mixed. Easterlin's (1995) work suggests complete adaptation in the USA since World War II, while Frijters et al. (2004) find that rising income in reunified Germany had a lasting impact on happiness for former East Germans.

<sup>7</sup> The experiment by Lazear et al. (2006) justifies this fear. They find that other-regarding subjects opt out of playing the dictator game when given the chance, thereby illustrating that the strategic environment determines the degree to which we observe other-regarding behavior.

<sup>8</sup> Expectations in this experiment refer to expectations about the current round's payment, not the payment in future rounds. They should thus be distinguished from the positive effect of expectation on happiness found by Frijters et al. (2008) because expectations there refer to future income levels and not just the current period.

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