Journal of Business and Economics, ISSN 2155-7950, USA
January 2015, Volume 6, No. 1, pp. 59-76
DOI: 10.15341/jbe(2155-7950)/01.06.2015/007

http://www.academicstar.us

Online Product Reviewers: Their Motivation and Reliability

Feng (Oliver) Liu
(California State University-Sacramento, CA 95819, USA)

Abstract: The growth in the collection and display of consumer ratings has led to concerns regarding their reliability and quality. In this paper, we propose and test a theory incorporating subjective well-being, altruism, egoism, and human capital, to analyze the differences in the quality of reviews by different consumers. The key proposition of our theory is that those who are high in subjective well-being should have altruistic motivations while those who are low would have egoistic ones. Subsequently, altruistic reviewers would build and use the product-related human capital necessary to provide product reviews that can be reliably used by others. In contrast, reviewers who are egoistic would not be as motivated as altruists to put in the effort to build and use product-related human capital. Thus, differences in the reliability of reviews should parallel differences in subjective well-being: those who are higher on this attribute should provide more reliable reviews than those who are lower. We use data collected via a large-scale online survey to empirically test different parts of our theory. Discrete choice models with MCMC estimation are developed for analysis. The results support our expectations. Managerial implications are discussed.

Key words: online reviews; SWB; human capital; choice modeling; MCMC
JEL code: M310

1. Introduction

Many online businesses provide consumers' ratings today as a mechanism for buyers to assess what they are buying and who they are buying from. Businesses are generally concerned about the reliability of such ratings, because the negative effect of unduly positive or negative ratings on sales. In particular, unwarranted accentuation of the positives by some consumers will raise the expectations of potential customers and lead to dissatisfaction. Exaggeration of the negatives, on the other hand, would turn potential customers away and hurt sales. Businesses therefore need to able to identify consumers who will evaluate their products objectively and provide fair assessments. They then need to encourage such consumers to participate in reviewing activities.

The literature has examined various factors that affect the reliability of online ratings (e.g., Dellarocas, 2003, 2005; Friedman & Resnick, 2001, Punj, 2013). Examples of some of the factors studied include manipulation of the ratings by sellers posing as consumers, sellers encouraging positively pre-disposed buyers to post ratings and payments by rating services to raters. Various mechanisms to improve reliability have also been proposed in the marketing and other literatures (e.g., Mudambi & Schuff, 2010; Fan, Tan & Whinston, 2005). One issue that has not been investigated, however, is that of why some consumers are, inherently, more prone to provide ratings that are not reliable while some others provide very reliable reviews. This is the issue that we investigate in this research.

Feng (Oliver) Liu, Ph.D., Assistant Professor of Marketing, College of Business Administration, California State University-Sacramento; research areas/interests: Marketing. E-mail: liu@saclink.csus.edu.

We approach our research issue from the perspective of why some consumers provide reviews and ratings to begin with. We argue that the act of providing ratings and reviews is one of philanthropy since the reviewers are donating their knowledge and time for the benefit of other consumers. Research in philanthropy and volunteerism suggests that those who volunteer, or are philanthropic, do so in return for one of two emotional benefits—altruism or egoism (Becker, 1976): altruism is the desire to help others for reasons unrelated to benefiting from the act while egoism is the motive of helping others with the ultimate objective of helping one's own self (Martin, 1994). The nature of donations will be very different for the two types of motivations (Abel & Marshawsky, 1988). Those who are philanthropic for altruistic reasons donate larger quantities (Duncan, 2004). In our context, this means that those who are reviewing products and providing ratings for altruistic reasons are likely to put in more effort, i.e., donate more of their time for the cause. As a result, they experience the products better, i.e., gain more product-related human capital (Becker, 1967) than those who are reviewing for egoistic reasons. It is this larger pool of human capital that helps them to provide better reviews.

What we mean by experience and product-related human capital is the knowledge gained through the use of a product in different ways. The consumer's experience can increase through (a) higher use of the product overall (b) greater experience with specific product attributes (c) greater experience with the use of the product in specific usage occasions and (d) collection of information regarding the product. Thus, reviewers who are interested in providing reliable reviews would engage in one or more of these four activities.

Our altruism-egoism framework to investigate the quality of consumer reviews of products raises another interesting question: who is the altruist and who is the egoist? Researchers in a broad range of disciplines including marketing (Bendepudi, Singh & Bendapudi, 1996; Schlegelmilch & Love, 1997), economics (Becker, 1976), political science (Monroe, 1994), psychology (Batson, 1991), sociology (Piliavin & Charng, 1990), philosophy (Sober & Wilson, 1998) and biology (Wright, 1945) have investigated this issue in a variety of contexts. Among the many correlates of altruism that these and other studies have examined, happiness and satisfaction with one's self has been described as a causal factor. Thus, people who are more satisfied with themselves and their environment, i.e., those who have a greater sense of subjective well-being (Diener & Lucas, 1999; Diener, 2000) are more likely to be altruistic than others (Frank, 1997; Diener, Scollon & Lucas, 2003). This would therefore suggest that consumers with a higher sense of subjective well-being are more likely to be altruistic and, hence, also more likely to provide reliable reviews than other consumers.

While it is affected by whether the reviewer has a stronger sense of well-being and, hence, higher altruism or egoism, the quality of reviews is also likely to depend on the ability of the reviewer. In addition to altruism, and the resulting desire to gain product-related human capital, therefore, an investigation of the reliability of reviews should also take into consideration the reviewer's intrinsic human capital (Becker, 1967) variables such as education.

We therefore propose and test a theory, incorporating subjective well-being and human capital variables, to analyze the differences in the quality of online reviews by different consumers. Our objective is to demonstrate that differences in the reliability of reviews between consumers will parallel differences in the two characteristics, i.e., subjective well-being and human capital.

We test our theory using data collected via an online survey from a sample of 2200 respondents. Our results are consistent with what our theory would predict: consumers who are higher on the subjective well-being and human capital measures are more likely to base their assessments of the category on human capital related to that product. We also demonstrate that consumers with higher subjective well-being and human capital, in general, put in more effort into building their human capital in various areas.

In the next section, we discuss the literature on subjective well-being, philanthropy and voluntarism, altruism and egoism, and human capital, in more detail to put our theory in context. Section three describes our data while section four presents and discusses our empirical results. Section five concludes with managerial implications of our findings and directions for additional research.

2. Discussion of the Literature

2.1 Subjective Well-being

Subjective well-being—frequently labeled SWB in various literatures—represents whether individuals evaluate their lives positively both currently as well as over extended periods such as over the past few years. It has also been referred to as a person's happiness or satisfaction with her quality of life (Diener et al., 2003). SWB has been investigated in multiple literatures including sociology (Bradburn, 1969; Andrews & Withey, 1976, Campbell et al., 1976), psychology (Diener, 1984; Diener, 2000; Diener & Diener, 1995; Kahneman, Diener & Schwarz, 1999), cultural studies (Oishi et al., 1999a, 1999b; Oishi & Diener, 2001) and economics (Frank, 1997; Frey & Stutzer, 2001; Oswald, 1997) to name a few.

Most of the literature on SWB has investigated a variety of its antecedents such as personality (DeNeve & Cooper, 1998), self-concept (Markus & Kitayama, 1991) and culture (Diener & Tov, 2004). Researchers have also examined the role of demographic characteristics such as health, income, educational background, and marital status (Wilson, 1967) on subjective well- being. Additionally, the role of culture in self-assessments, and experience, of subjective well- being has also been examined (e.g., Suh, Diener, Oishi & Triandis, 1998). While these external factors have been found to have some correlation with SWB, recent findings suggest that SWB is more closely related to, and is a consequence of, some stable personality traits such as extraversion (Lucas & Fajita, 2000). Additionally, research also suggests that SWB is correlated with conscientiousness (DeNeve & Cooper, 1998). These findings are important for our theoretical framework since extraversion has been found to be one of the characteristics of those who are interested in providing reviews and ratings of products (Hennig-Thurau et al., 2004; Sundaram et al., 1998). Similarly, conscientiousness has also been found to be related to consumers' interest in reviewing products (Mooradian & Olver, 1997). Thus, some of the characteristics of those interested in reviewing products are also antecedents of subjective well-being, thus suggesting a relationship between subjective well-being and product reviewing behavior.

In addition to antecedents, the literature has also examined some correlates of subjective well-being. In particular, findings in multiple disciplines suggest that higher subjective well-being is associated with greater search for and use of information (e.g., Casas et al., 2004). Thus, higher subjective well-being is correlated with a greater interest in building one's human capital.

Findings on the consequences of subjective well- being are also relevant to our research. Multiple studies, in various disciplines, have reported a positive relationship between SWB and philanthropic and volunteering behaviors (Isen & Levin, 1972; O'Malley & Andrews, 1983; Rosenhan, Salovey & Hargis, 1981; Rosenhan et al., 1974; Lyubomirsky et al., 2005). In particular, people who have a greater sense of subjective well-being are more likely to be altruistic than others (Diener & Lucas, 1999; Diener, 2000; Frank, 1997; Diener, Scollon & Lucas, 2003).

2.2 Philanthropy and Voluntarism

As discussed in their authoritative book by Sober and Wilson (1998), the motives of giving time or money to a cause can be classified into three groups: hedonism, egoism and altruism. These motives would apply in the context

of our research as well since voluntary acts of reviewing or rating products could be the result of them. We, however, only consider egoism and altruism in our framework, because hedonism can be construed as a special case of egoism (Sober & Wilson, 1998).

2.2.1 Altruism and Egoism

The key question of interest in our context is that of understanding the consequences of each motive. If the motive has an effect on the type of donation, we should expect to see a difference between altruistic and egoistic raters in the quality of product reviews and ratings that they provide.

Findings in the literature suggest that altruists are likely to donate more than egoists. Specifically, considering egoism and altruism as two ends of a spectrum-with pure egoism representing zero altruism—as altruism increases, so do the joy of giving (Abel & Warshawsky, 1988) and the amount donated (Broberg et al., 2007). This would therefore suggest that consumers with a higher sense of subjective well-being, and are more likely to be altruistic, are also the reviewers who would provide more reliable reviews than other consumers because they would be willing to donate more of their time and human capital for the well-being of others.

Overall, therefore, there is some direct and indirect evidence in the literature that altruism leads to a greater concern about the welfare of people or the cause that the donor is giving to and, hence, to larger donations of time and/or money. In contrast, similar findings have not been reported in the case of egoism.

2.3 Human Capital

2.3.1 Product-related Human Capital

Not surprisingly, the studies in philanthropy that examine the role of altruism on the size of donations control for the effects of budgetary and other constraints on the donors while measuring the effects of altruism. Additionally, research in other areas such as social capital (Putnam, 2000) also reports empirical evidence that philanthropy and voluntarism are related to factors such as income and wealth. Thus, the roles of altruism and egoism on volunteering and/or donating activities are moderated by the respondent's economic characteristics. Clearly, the intuition here is that, even if a donor is altruistic, how much she donates is affected by what she can afford to. Therefore, altruists build the necessary capital to contribute enough to make a difference for their cause.

The same intuition as in the case of philanthropy would apply in the case of product reviews as well. An altruistic reviewer would gather enough experience on the product either on her own or by collecting information from other sources in order to provide helpful and reliable reviews. This would not be the case with an egoistic reviewer however. Such a reviewer would utilize whatever experience she currently has to provide some reviews but would not go out of her way to gain the experience or information that would help her to provide insightful reviews.

2.3.2 Intrinsic Human Capital

In addition to product-related human capital, we need to consider a reviewer's intrinsic human capital, such as education, as well in investigating the reliability of reviews. This is important since ignoring these factors might lead to incorrect conclusions regarding the role of altruism and egoism in the reliability of reviews. Thus, for instance, a reviewer, who is not very altruistic, but is highly educated, may have the ability to provide more reliable reviews than another reviewer who is altruistic but not as educated. Similarly, a reviewer who faces time constraints may be altruistic but provide less reliable reviews than a reviewer who has egoistic motives but is not subject to similar constraints on time. Likewise, an older reviewer might have more knowledge of certain product categories like air-travel just because of prior use. Such reviewers may therefore be able to compare and contrast different brands better, and provide more reliable reviews, than younger consumers. We therefore include demographic characters as a proxy for intrinsic human capital in our framework.

2.4 Key Proposition

Our discussion suggests that, taken together, different streams of literature across multiple disciplines can provide a theoretical framework to analyze product reviewing behavior. Thus, an increase in subjective well-being increases a person's interest in searching for and using information as well as in the tendency, desire and ability to be altruistic. As subjective well-being increases, so might an interest in providing reliable reviews of products and services for use by others. This, therefore, means that reviewers with higher subjective well-being should provide more reliable reviews by putting in more effort into experiencing and/or understanding the products that they are reviewing and hence building their product-related human capital. This is the key proposition of our theory. We next discuss the data that we use for our empirical analysis.

3. Data and Operationalization

We empirically test our theory using data collected in a survey by a nationally known non-profit national research organization. This organization collects data on an ongoing basis on various social, policy, economic and business issues related to, and affected by, the growth of the Internet. The specific dataset that we use is from a telephone survey of 2200 adults. The survey used an omnibus format and the instrument included questions on a variety of topics. The survey also collected extensive data on the respondents' demographics and about their experience with, and use of, the Internet.

The survey also included a question on subjective well-being. Specifically, the question asked respondents to state whether their subjective well-being was high or low. Given our research issue, we are only interested in examining respondents who answered the question on subjective well-being. We therefore selected only such respondents. The resulting sample had 761 respondents or about 35 percent of the entire sample.

To test our theory empirically, we need operational measures of the constructs in our framework. Specifically, we need to operationalize (1) product reviews (2) subjective well-being and (3) product-related as well as intrinsic human capital. Additionally, we need measures of some of the correlates of subjective well-being to examine whether those that we classify as high on subjective well-being indeed belong to that category. Specifically, we need data on correlates such as the acquisition and use of information because, as discussed previously, past research suggests that greater subjective well-being is correlated with greater gathering and use of information.

3.1 Product Reviews

The survey included a number of questions on the use of search engines by the respondents. Additionally, it included two questions that asked them to assess the performance of search engines. We therefore use search engines as the category being reviewed by the respondents and their responses to the two assessment questions as their reviews of the category.

3.2 SWB

The survey included one question regarding how satisfied the respondent is with how things are in general. Such satisfaction-based measures of subjective well-being have long been used in the literature (Andrews & Robinson, 1991; Campbell, 1976; Diener, Suh, Lucas & Smith, 1999; Hausman & McPherson, 1996; Lucas, Diener & Suh, 1996; Rose, 1955). We therefore use the responses to this question as the operational measures of the respondents' subjective well-being.

3.3 Human Capital

Human capital refers to the experience, knowledge and/or abilities of individuals or households (Becker, 1993).

Since we are dealing with sharing one's experience with a product by providing reviews or opinions online, one element of human capital that we need to incorporate is the experience with, and skills in, using the Internet and posting one's opinions and reviews online. We include two measures of online experience. The first is the number of years that the respondent has been using the Internet for and the second is how often the respondent goes online ranging from several times a day to only occasionally.

Given the key proposition of our theory, another measure of human capital that we need to include is that related to the experience with the specific product being reviewed. Since, in our case, the product category that is assessed is search engines, we include multiple measures of search-engine related human capital in our analysis. Specifically, we include responses regarding how often the respondent uses search engines. In addition, we include a measure of how many different brands of search engines the respondent uses. This captures the respondent's exposure to different types of products in the category and, hence, her overall experience with the product. A third measure that we include is the self-assessed expertise of the respondent in using the product category. We also include three additional questions that assess the importance of the category to the respondents. Our assumption here is that the greater its importance to a respondent the higher would be her involvement with the category and, hence, the greater would be her experience in using the category. Thus, in all, we have six measures of human capital related to the use of search engines-the product category being assessed in our analysis.

As mentioned previously, in addition to product-related human capital, we also need to consider the role of intrinsic human-capital while testing our theory. Following the literature (Ritzen & Winkler, 1977), we include some demographic variables as proxies of intrinsic human capital. As discussed previously, we include education, income and age. We also include marital status and number of children as proxies for the amount of time that a reviewer has to build product-related human capital.

3.4 Correlates of SWB

We mentioned earlier that, in addition to its antecedents and consequences, the literature has also examined the correlates of subjective well-being. Given the key role of subjective well-being in our theoretical framework and, hence, our empirical analysis, we need to demonstrate that respondents who we classify as those with higher subjective well-being exhibit some of its correlates. Researchers on subjective well-being have reported that those with higher subjective well-being are more likely to be interested in the research and use of information in various activities. We therefore examine the role of collection and use of information by the high and low subjective well-being groups in our survey in various activities they engage in. Specifically, we selected a range of activities involving search for and/or purchase of services over the Internet. As discussed shortly, we analyze the role of Internet-related human capital, demographic characteristics and search for information using search engines on these activities to examine whether respondents with higher subjective well-being indeed gather and use more information in their activities than those with lower subjective well-being.

All of the variables in the dataset, used in our empirical analysis, are summarized in Table 1.

3.5 Expectations

Given our theory, and our specific operationalization of the constructs and different variables, we can expect the following empirical findings and relationships. First, in terms of the correlates of subjective well-being, we should expect search engines to play a bigger role for respondents with higher subjective well-being than those with lower subjective well-being in all of the online activities. Second, similar to their role in all other activities, we would expect search engines, i.e., the collection and use of information, to play a higher role in the product rating activity for the higher subjective well-being group than for the other group of respondents. Finally, based on our key

proposition, we should expect human capital related to the use of search engines to play a stronger role in the assessment of search engines by the higher subjective well-being group than the lower subjective well-being one. Such a finding would thus demonstrate that the reviews of the higher SWB group are likely to be more reliable since they are more based on the category-related human capital. We next discuss our empirical results related to each of these three theory-based expectations.

Table 1 Summary Statistics of the Dataset

	High SWB	Low SWB		High SWB	Low SWB
% participating in online rating	30.7	34.1	Activities (% participating in each activity)		
Assessing Search Engine Performance			Travel Info	79.2	79.2
Search Engine bias (1-unbiased, 2-depends, 3-biased)	1.45	1.42	Educational Research	60.1	67.3
Search Engine quality (1-always, 2-most of time time, 3-some of the time, 4-hardly ever)	1.93	1.95	Political News	53.1	58.6
			Travel Reservations	67.2	62.8
Human Capital Related to Experience with the Internet			Job Info.	39	46.1
Online Frequency (1-several times a day, 2-once a day, …, 6-less often than once in few weeks)	1.93	2.02	Housing Info.	31.4	40.9
Internet Experience (Number of years)	5.11	5.05	Paid Content	11.6	12.6
Human Capital Related to Search Engines			Demographics		
Search Frequency (1-several times a day, 2-once a day, …, 6-less often than once in few weeks)	3.26	3.09	Gender (1-Male, 2-Female)	0.58	0.5
Number of SE's	1.61	1.64	Age	41.8	41.1
Ability (1-very confident, 2-somewhat confident, 3-not too confident, 4-not confident)	1.58	1.57	Number of children (under 18)	0.81	0.7
Rely on Search (1-couldn't live without search engines, 2-use but can do without, 3-woldn't miss them)	1.85	1.74	Education (1-None, 2-High school incomplete, 3-High school graduate, 4-Technical, trade or vocational school AFTER high school, 5-Some college, 6- College graduate, 7-Post-graduate training	5.13	4.97
Need (1-I absolutely need all information that I search for, 2-need most of the information, 3-some of the information, 4-very little)	2.61	2.65	Income (1< $10,000, 2-$10,000-$20,000, 3-$20,000-$30,000, 4-$30,000-$40,000, 5-$40,000-$50,000, 6-$50,000-$75,000, 7-$75,000-$100,000, 8-$100,000 or more)	5.81	5.26
Search Access (1-wouldn't bother to look up all of the information I search for if I didn't have access to the Internet, 2-most, 3-some, 4-very little)	2.78	2.8	Marital Status (1-Married, 2-Living as married, 3-Divorced, 4-Separated, 5- Widowed, 6-Never been married)	0.64	0.51

4. Empirical Results

4.1 Role of Search in Online Activities

Our first expectation is that the role of search would differ for consumers with low and high subjective well-being. Specifically, we expect search to play a bigger role for respondents with higher subjective well-being

than for those with lower subjective well-being. Empirically assessing whether this expectation is borne out in our data will demonstrate the face validity of our operationalization.

As discussed previously, we have data on whether the respondents participate in each of seven different activities. Thus, one approach for assessing the role of search on these activities would be to treat these responses as binary and, to capture the potential correlation among the responses of each respondent, calibrate a multivariate probit model jointly on the vector of seven responses of each respondent. We also consider the role of variables other than search in the respondents' decisions regarding whether or not to engage in these activities by including Internet-related experience, as well as demographic characteristics, in our model. As is standard in the specification of the probit model, we assume that the respondent engages in an online activity only if the associated utility is positive. Formally, we specify our model as follows,

$$U_{ij} = \beta_{0j} + \beta_{1j} InternetExperience + \beta_{2j} OnlineFrequency + \beta_{3j} SearchFrequency + \beta_{4j} Gender + \beta_{5j} Age + \beta_{6j} NumberofChildren + \beta_{7j} Education + \beta_{8j} Income + \beta_{9j} MaritalStatus + \varphi_{ij,} \quad (1)$$

$$i = 1, \dots, N_{HSWB/LSWB}$$

$$Y_{ij} = \begin{cases} 1 & if U_{ij} > 0 \\ 0 & otherwise \end{cases}$$

The Y_{ij} in the specification represents whether or not respondent i engages in online activity j. It takes on the value 1 if the respondent does participate in the activity and zero otherwise. NHSW and NLSWB represent the number of respondents in the high and low subjective well-being. For a detailed discussion on multivariate probit specification, please see Ashford and Sowden (1970). We take a Bayesian approach and calibrate the model using MCMC methods suggested by Edwards and Allenby (2003). We use standard Gibbs sampling for the MCMC iterations.

The MCMC estimates of the parameters for the low and high SWB segments—the means of the final 10,000 draws—are included in Tables 2 and 3 respectively. Next to the parameters, we also include the empirical standard deviations based on the same draws. We highlight parameters that are significant at the 0.05 level based on a mean to standard deviation ratio.

Table 2 MCMC Estimates of Role of Human Capital, Search and Demographics in Various Online Activities for the Low SWB Segment

	Travel Info		Educ. Research		Political News		Travel Reserve		Job Info.		Housing Info.		Paid Content	
	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.
Intercept	-0.140	0.236	0.502	0.373	-0.134	0.324	-0.641	0.277	0.976	0.399	0.265	0.341	-0.542	0.404
Internet Experience	0.051	0.040	0.133	0.044	0.044	0.042	0.000	0.038	0.047	0.043	0.066	0.044	0.060	0.057
Online Frequency	-0.072	0.065	0.044	0.060	-0.037	0.060	-0.059	0.059	-0.028	0.061	0.099	0.063	-0.096	0.075
Search Frequency	-0.038	0.053	-0.117	0.051	-0.183	0.048	-0.123	0.048	-0.049	0.047	-0.219	0.051	-0.092	0.060
Gender	0.001	0.122	0.018	0.133	0.219	0.126	0.025	0.124	0.090	0.123	-0.077	0.124	0.142	0.145
Age	0.008	0.005	-0.017	0.005	0.004	0.005	0.001	0.004	-0.025	0.005	-0.012	0.005	-0.014	0.006
Number of children	0.017	0.058	0.190	0.067	-0.107	0.058	0.008	0.056	-0.006	0.057	0.105	0.058	-0.066	0.083
Education	0.066	0.043	0.098	0.049	0.043	0.045	0.127	0.039	0.081	0.046	-0.002	0.046	-0.006	0.052
Income	0.080	0.036	-0.042	0.038	0.066	0.036	0.155	0.038	-0.071	0.037	0.057	0.036	0.036	0.045
Marital Status	-0.103	0.150	-0.233	0.148	0.082	0.145	-0.011	0.130	-0.247	0.143	-0.431	0.147	-0.150	0.179

Table 3 MCMC Estimates of Role of Human Capital, Search and Demographics in Various Online Activities for the High SWB Segment

	Travel Info		Educ. Research		Political News		Travel Reserve		Job Info.		Housing Info.		Paid Content	
	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.
Intercept	0.024	0.239	1.092	0.474	-0.323	0.438	-0.497	0.320	0.973	0.484	-0.220	0.305	-0.425	0.393
Internet Experience	0.111	0.046	0.000	0.051	0.054	0.051	0.104	0.049	0.082	0.052	0.044	0.047	0.057	0.062
Online Frequency	0.003	0.065	-0.016	0.073	0.013	0.073	0.014	0.065	0.091	0.073	0.064	0.071	-0.034	0.095
Search Frequency	-0.140	0.059	-0.160	0.058	-0.277	0.059	-0.168	0.055	-0.166	0.060	-0.108	0.055	-0.149	0.073
Gender	0.022	0.151	0.018	0.155	0.258	0.155	-0.181	0.140	-0.173	0.158	-0.176	0.137	0.419	0.201
Age	-0.010	0.005	-0.021	0.005	0.010	0.005	-0.003	0.005	-0.023	0.006	-0.019	0.006	0.000	0.007
Number of children	0.029	0.016	0.037	0.027	-0.088	0.048	0.035	0.020	-0.114	0.059	-0.044	0.042	-0.122	0.051
Education	0.104	0.050	0.070	0.057	0.132	0.056	0.078	0.053	0.038	0.056	0.093	0.055	-0.069	0.061
Income	0.068	0.046	0.017	0.046	-0.034	0.047	0.095	0.045	-0.067	0.047	0.030	0.048	-0.050	0.051
Marital Status	0.492	0.150	0.075	0.167	0.097	0.171	0.461	0.148	0.012	0.172	0.003	0.142	-0.122	0.194

The estimates are consistent with the insights provided by the descriptive statistics in Table 1. The summary statistics suggest that the low SWB group is more likely to be interested in educational research online than the high SWB group. Consistent with this, the educational research activities of the low SWB group are explained much better than for the high SWB group. In fact, the unexplained part of this activity, i.e., the intercept, is the largest parameter for the high SWB group whereas it is not statistically significant for the low SWB group. This is reversed for the case of travel reservations—an activity that the high SWB group engages in more than the low SWB group. Thus, overall, the estimates are consistent with the descriptive statistics and therefore have face validity.

Additional evidence of the reliability of the estimates is also provided by the estimated correlations among the random components in the utilities of the activities. The estimates are reported in Tables 4 and 5.

Table 4 MCMC Estimates of Correlations among Online Activities (Low SWB Group)

	Travel Info	Educational Research	Political News	Travel Reserve	Job Info.	Housing Info.	Paid Content
Travel Info	1.00	0.12	0.20	0.91	0.08	0.27	0.07
Educ Research	0.12	1.00	0.27	0.00	0.40	0.18	0.13
Political News	0.20	0.27	1.00	0.23	0.19	0.06	0.18
Travel Reserve	0.91	0.00	0.23	1.00	0.11	0.21	0.39
Job Info.	0.08	0.40	0.19	0.11	1.00	0.43	-0.03
Housing Info.	0.27	0.18	0.06	0.21	0.43	1.00	0.05
Paid Content	0.07	0.13	0.18	0.39	-0.03	0.05	1.00

Table 5 MCMC Estimates of Correlations among Online Activities (High SWB Group)

	Travel Info	Educational Research	Political News	Travel Reserve	Job Info.	Housing Info.	Paid Content
Travel Info	1.00	0.22	0.10	0.76	0.32	0.39	0.42
Educ Research	0.22	1.00	-0.01	0.31	0.19	-0.01	-0.13
Political News	0.10	-0.01	1.00	-0.21	0.20	0.12	0.23
Travel Reserve	0.76	0.31	-0.21	1.00	0.19	0.20	-0.09
Job Info.	0.32	0.19	0.20	0.19	1.00	0.30	0.06
Housing Info.	0.39	-0.01	0.12	0.20	0.30	1.00	-0.20
Paid Content	-0.20	0.42	0.23	-0.09	0.06	-0.20	1.00

The entries in these tables show very high correlation between collecting travel information and making travel reservations online. Thus, again, the correlations are consistent with what one would expect and add to the face validity of the parameter estimates.

Of particular interest for us is the role of search in each of the activities. This parameter, where significant, is negative. Given our coding of the search frequency variable—with 1 indicating the highest frequency of the use of search engines—an increase in the search frequency variable represents a decrease in the use of search engines. The coding of the participation in online activities, on the other hand, is in the opposite direction. Thus, a negative search frequency parameter indicates that as the use of search engines increases, participation in the activity also increases and vice versa.

Our expectation is search plays a stronger role in the online activities of the high SWB group than for the low SWB group. This expectation is fully supported by the results in two ways. First, the parameter for search frequency is significant for every activity for the high SWB group whereas this is so for only four out of the seven activities for the low SWB group. Second, the estimated parameter for search frequency is larger in magnitude-indicating a stronger role of search—in every case, except for the search for housing information—for the high SWB group compared to the low SWB one. Since the low and high SWB groups are almost identical in most respects except for a few, as suggested by the descriptive statistics in Table 1, the differences between the two groups in the role of search are clearly because of the only major difference between them, i.e., in their subjective well-being. Overall, therefore, these results suggest that our operationalization of the subjective well-being construct is reliable.

4.2 Role of Search in Online Rating Activities

Our second expectation is that the collection and use of information would play a bigger role in the rating activity for the high SWB group than for the low SWB group. We took a similar approach as earlier to investigate whether this is indeed the case. Specifically, we assumed that the decision regarding whether or not to engage in rating products and services online is affected by the utility that activity provides. We used the same variables as earlier to specify our model as follows,

$$U_i = \beta_0 + \beta_1 InternetExperience + \beta_2 OnlineFrequency + \beta_3 SearchFrequency + \beta_4 Gender + \beta_5 Age + \beta_6 Numberof Children + \beta_7 Education + \beta_8 Income + \beta_9 MaritalStatus + \varphi_{i,} i = 1, \dots, N_{HSWB/LSWB} \quad (2)$$

$$Y_i = \begin{cases} 1 & if U_i > 0 \\ 0 & otherwise \end{cases}$$

The specification in this case involves the single variable-rating activity. As earlier, we use MCMC methods to calibrate the model. Estimates of the parameters for both the low and high SWB groups, as well as the empirical standard deviations of the last 10,000 draws of the parameters, are provided in Table 6.

Despite the apparent inability of the other variables to explain the participation in online rating activities by the two groups, the significant parameters in the models point out an interesting and, theoretically consistent, difference between the two groups. Specifically, in the case of the low SWB group, the only significant variable is online frequency, suggesting that as the use of the Internet increases, the participation in online rating activity increases as well. Interestingly, however, search frequency does not have a significant role in the online rating activity of this group. Another interesting character of the estimates for this group is that the intercept is substantially larger than the other parameters and is statistically significant, indicating that the substantive variables are unable to explain the online rating activity of this group.

Table 6 Role of Human Capital, Search and Demographics in Rating Activity

	Low SWB		High SWB	
	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.
Intercept	0.503	0.135	0.177	0.170
Internet Experience	0.021	0.015	0.029	0.018
Online Frequency	-0.073	0.022	0.010	0.026
Search Frequency	-0.016	0.017	-0.045	0.020
Gender	0.030	0.045	0.102	0.055
Age	-0.003	0.002	0.000	0.002
Number of children	-0.010	0.021	0.000	0.002
Education	0.006	0.016	0.002	0.020
Income	0.000	0.013	0.015	0.016
Marital Status	-0.016	0.052	-0.052	0.059
Square Root of Error Variance	0.215	0.015	0.211	0.017

Perhaps the most interesting character of the results is the nature of the estimates for the high SWB group. The only significant parameter for this group is the search frequency variable. As discussed previously, the negative sign on this parameter indicates that great participation in online rating activities is associated with higher use of search engines and greater interest in collecting information. Additionally, the estimate of the intercept for this group is not significantly different from zero indicating that the single, significant parameter, i.e., the parameter for search frequency, is able to capture a substantial amount of the variation in the online rating activity of this group.

Taken together, the significance/non-significance of variables for both models confirm again our theoretical expectation regarding the differences between the high and low SWB groups. The high SWB group is more likely to collect and use information in its rating activities than the low SWB group. This finding thus provides additional evidence that our operationalization of subjective well-being is appropriate.

4.3 Role of Human Capital Related to Search Engines in Their Assessment

As discussed earlier, we use two measures to capture the respondents' ratings/assessments of search engines. The first is the respondents' assessment of the extent of bias in the results displayed by search engines. The second measure is related to the respondents' review of the performance of search engines in terms of the quality of the results that they provide.

4.3.1 Assessments of Bias in Search Results

Responses to this measure are ordinal. We code them as 1 for "Yes, fair and unbiased source of information", 2 for "Depends" indicating some ambiguity regarding the results are always unbiased or not and 3 for "No, not fair and unbiased". Given the ordinal nature of the assessments, we use an Ordinal Probit specification of utilities to investigate each of the responses. We therefore include thresholds in the model specification. Further, we include product-related human capital in the form of experience with the Internet and search engines. We also include measures of intrinsic human capital. Thus, our model is as in Equation (3) below,

$$U_i = \beta_0 + \beta_1 InternetExperience + \beta_2 OnlineFrequency + \beta_3 SearchFrequency + \beta_4 NumberofSE's + \beta_5 RelyonSearch + \beta_6 Need + \beta_7 SearchAccess + \beta_8 Ability + \beta_9 Gender + \beta_{10} Age + \beta_{11} NumberofChildren + \beta_{12} Education + \beta_{13} Income + \beta_{14} MaritalStatus + \varphi_{i,} i \quad = 1, \dots, N_{HSWB/LSWB} \quad (3)$$

$$Y_i = \begin{cases} 1\ if U_i \le 0 \\ 2\ if\ 0 < U_i \le \gamma \\ 3\ if U_i > \gamma \end{cases}$$

In Equation (3), γ represents the single threshold that we need to include for the three possible values that the responses can take to the question assessing the bias of search engine results. We use the Gibbs with Metropolis-Hastings algorithm in Cowles (1996) to obtain MCMC estimates of the parameters and the single threshold. The results are presented in Table 7. Point estimates of the parameter means and their standard deviations, based on the final 20,000 draws, are included in Table 7.

Table 7 Role of Internet and Search Related Human Capital and Demographics in Assessing the SE Result Bias

	Low SWB		High SWB	
	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.
(Intercept)	-2.134	0.630	-1.046	0.682
Human Capital Related to Experience with the Internet				
Internet Experience	0.134	0.061	-0.049	0.058
Online Frequency	-0.061	0.075	0.054	0.079
Human Capital Related to Search Engines				
Search Frequency	-0.020	0.057	-0.161	0.069
Number of SE's	-0.013	0.118	0.204	0.134
Rely on Search	0.020	0.125	-0.212	0.157
Need	0.063	0.082	-0.010	0.100
Search Access	-0.090	0.082	0.018	0.093
Ability	0.045	0.123	0.322	0.142
Demographics (Antecedents of Subjective Well-being)				
Gender	0.103	0.144	0.087	0.171
Age	-0.006	0.006	-0.006	0.006
Number of Children	-0.101	0.076	0.088	0.073
Education	0.145	0.053	0.083	0.061
Income	0.067	0.041	0.081	0.048
Marital Status	-0.004	0.170	-0.401	0.189
Estimate of Cut Point				
Threshold	0.126	0.031	0.237	0.050

The pattern of results in Table 7 is remarkably similar to those in the case of participation in the online rating activity. The only significant substantive variable for the low SWB group is its human capital related to the Internet, i.e., Internet Experience. None of the search engine related variables have a relationship with the assessments, and this pattern is to be expected based on our theory that low SWB people are less likely to be altruistic and, hence, unlikely to build the necessary human capital related to a product to assess it reliably.

The estimates for the high SWB group are in strong contrast to those of the other group. Specifically, as in the case of the online rating activity, the intercept is not significant suggesting that the variation in this group's assessment of search engine bias is well explained by the included variables. Additionally, two of the search engine related human capital variables are significant and in the right direction. Specifically, as earlier, the search frequency variable is negative. This suggests that, if their experience with search engines is low, and hence the value of the search frequency variable is high, the group is less likely to conclude that the results provided by search engines are biased. This is obviously because they do not have sufficient experience to judge the bias, or lack of it, in the results that they see. As

they gain experience with search engines, however, they are more likely to conclude that the results may be biased perhaps because they see more sponsored results being placed at the top of the search results by search engine brands.

It is also interesting that their ability to use search engines to find what they are looking for affects this group's assessment of the results provided. Thus, as their ability increases, i.e., the value of the ability variable decreases, they are less likely to conclude that the results are biased and vice versa. While the converse of this is true as well, i.e., that they are more likely to conclude that the results are biased as their ability decreases, the likelihood of that conclusion is reduced if their search frequency increases. Among the demographic variables, the only significant variable for this group is marital status. The reason that being married increases the likelihood of seeing the results as biased is clear from the theory—being married reduces the time that the respondent has to reliably assess the quality of search engines.

4.3.1 Assessments of the Quality of Search Results

The responses on the quality of the results, in terms of whether the respondent finds the information that she is looking for, are also ordinal. Specifically, they are coded as 1 for "Always", 2 for "Most of the time", 3 for "Only some of the time" and 4 for "Hardly ever". The utility specification in this case is identical to that in Equation (3). The only difference is that, since the response variable takes four values, rather than three, we have two thresholds. We obtain MCMC estimates of the parameters as earlier and the results based on the final 20,000 draws are reported in Table 8.

Table 8 Role of Internet and Search Related Human Capital and Demographics in Assessing the SE Result Satisfaction

	Low SWB		High SWB	
	Sample Mean	Std. Dev.	Sample Mean	Std. Dev.
(Intercept)	-1.370	0.473	-1.032	0.659
Human Capital Related to Experience with the Internet				
Internet Experience	-0.015	0.042	0.115	0.055
Online Frequency	-0.074	0.060	-0.050	0.077
Human Capital Related to Search Engines				
Search Frequency	0.064	0.047	0.104	0.066
Number of SE's	0.146	0.098	-0.027	0.132
Rely on Search	0.070	0.100	-0.158	0.147
Need	0.201	0.067	0.222	0.097
Search Access	0.071	0.068	0.066	0.090
Ability	0.658	0.105	0.916	0.155
Demographics (Antecedents of Subjective Well-being)				
Gender	0.057	0.120	0.125	0.163
Age	-0.006	0.005	-0.006	0.006
Number of Children	-0.065	0.059	-0.033	0.072
Education	0.051	0.043	0.030	0.055
Income	0.055	0.034	-0.110	0.048
Marital Status	0.040	0.139	0.531	0.193
Estimated Cut Points				
Threshold 1	2.342	0.112	3.165	0.199
Threshold 2	3.993	0.282	4.643	0.382

In contrast to the case of the assessments of bias, two of the search-related human capital variables—Need and Ability—have significant effects for the low SWB group. The positive sign of the estimated parameter for Need

variable indicates that, as the need for the searched information increases, the assessment of the quality of search results increases as well and vice versa. The same is the case for the Ability variable which represents respondents' self-assessments of their ability to use search engines to find information that they need. Overall, these results suggest that the low SWB group's assessments of the quality of search results is more based on their use of search engines than in the case of their assessments of the bias of search results.

The estimated intercept for the high SWB group is not significant thus suggesting that the variables included in the specification are able to explain the responses of this group better than those of the low SWB group. Nonetheless, similar to the estimates for the low SWB group, both the Need and Ability parameters are positive and significant for this group as well. The difference, however, is in the magnitude. For both variables, the estimated parameters are larger than those for the low SWB group. This suggests that the positive effects of increasing need for the information being searched for, and search skill, are stronger for this group than for the low SWB group. Conversely, the negative effects of lower need of the searched information and lower skill levels are stronger for this group than for the low SWB group. Both patterns clearly suggest that the high SWB group's assessments of the quality of search results are tied more closely to their use of search engines.

As in the case of the assessments of the bias of search results, the estimates here suggest that some demographic characteristics such as marital status and, additionally, education, can also explain the high SWB group's assessments of the quality of search results.

Overall, the results regarding the role of human capital related to search engines in their assessments confirm our expectation. It plays a bigger role in the reviews of the category by respondents of the high subjective well-being group than for those with lower subjective well-being. The low SWB respondents' assessments are therefore not explained as well by human capital and, as a result, the unexplained part of their reviews is significantly larger than for the high SWB group.

5. Discussion and Conclusions

Our analyses, overall, provide evidence that supports our theory regarding why the reviews of products and services of some reviewers are more reliable than those of others. The subjective well-being of reviewers is a factor that is not directly related to the products or services being reviewed. It can, however, be a strong moderator of how reliable the reviews are. Reviewers with higher subjective well-being are likely to provide more reliable reviews, based on their use of, and experience with, the products and services being reviewed than reviewers with lower subjective well-being.

From a managerial perspective, therefore, our results suggest that businesses interested in collecting reviews of their products or services, and those in the business of providing product and service reviews such as epinoins.com and angieslist.com, should be cautious about who they solicit the reviews from and how they solicit them. Thus, reviewer selection and solicitation should be selective and based on attributes related to subjective well-being. For instance, selection could be based on antecedents of higher subjective well-being such as being married, having children in the household, being higher on education and having a higher income. Similarly, lifestyle, personality and other correlates of higher subjective well-being (DeNeve & Cooper, 1998) should be used as screening variables.

Our analyses also provide another interesting result. While, in general, they are less likely to base their reviews on their experience with the products they are reviewing, reviewers with lower subjective well-being may

nonetheless base some types of reviews on their product experience. For instance, while their human capital related to search engines had no role in their assessments of bias in results provided by search engines, the use of search engines did play a role in their reviews of the quality of search results for low subjective well-being respondents. Thus, while being less reliable overall than reviewers with higher subjective well-being, low SWB reviewers may be able to provide more reliable reviews for some of the attributes, functions or aspects of performance of products and services.

The above finding suggests that, In addition to screening based on variables that indicate higher subjective well-being, businesses should also have a better understanding of the specific attributes and features of the products that they can expect to get more reliable reviews for. Our current research does not provide specific insights regarding the type of attributes for which low SWB reviewers may also provide more reliable reviews. This, however, would be a fruitful avenue for additional research.

One limitation of our study is that we test our theory on only one product category, i.e., search engines. While the consistency between the results for this category, and our expectations, provides evidence that supports our theory, it would be valuable to examine other categories. Such an investigation should include various categories such as tangibles vs. intangibles, hedonic vs. utilitarian, complex (multi-attribute) vs. simple (one or few product attributes) and branded vs. generic. Results from these analyses will provide insights regarding cases where the theory is particularly strong in explaining the reliability of reviews and conditions under which it may not be able to provide good insights.

Overall, the key contribution of our research is in providing a theoretical framework to investigate the reliability of product and service reviews by consumers. As mentioned earlier, reviews of products and services are an increasing presence on the sites of most online businesses today and have also become a business by themselves. We therefore hope that the proposed theory, and empirical results, will stimulate additional research in this growing area.

References:

Abel Andrew B. and Mark Warshawsky (1988). "Specification of the joy of giving: Insights from altruism", *The Review of Economics and Statistics*, Vol. 70 (February), pp. 145-149.

Andreoni James (1989). "Giving with impure altruism: Applications to charity and ricardian equivalence", *The Journal of Political Economy*, Vol. 97 (December), pp. 1447-1458.

Andreoni James (1990). "Impure altruism and donations to public goods: A theory of warm-glow giving", *The Economic Journal*, Vol. 100 (June), pp. 464-477.

Andrews Frank M. and Stephen B. Withey (1976). *Social Indicators of Well-Being: AmericanPerceptions of Quality of Life*, New York, NY: Plenum Press.

Andrews Frank M. and John P. Robinson (1991). "Measures of subjective well-being", in: John P. Robinson, Phillip R. Shaver, & Lawrence S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes*, San Diego, CA: Academic Press.

Ashford J. R. and R. R. Sowden (1970). "Multi-variate probit analysis", *Biometrics*, Vol. 26, pp. 535-546.

Batson C. D. (1991). *The Altruism Question: Toward a Social-Psychological Answer*, Hillsdale, NJ: Lawrence Erlbaum Associates.

Becker Gary S. (1976). "Altruism, egoism, and genetic fitness: Economics and sociobiology", *Journal of Economics Literature*, Vol. 14 (September), pp. 817-826.

Becker Gary S. (1974). "A theory of social interactions", *Journal of Political Economy*, Vol. 82 (December), pp. 1063-1093.

Becker Gary S. (1993). *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*, Chicago, IL: The University of Chicago Press.

Bendapudi N., Singh Surendra N. and Venkat Bendapudi (1996). "Enhancing helping behavior: An integrative framework for promotion planning", *Journal of Marketing*, Vol. 60 (July), pp. 33-49.

Bolton Gary E. and Elena Katok (2004). "How effective are electronic reputation mechanisms? An experimental investigation",

Management Science, Vol. 50 (November), pp. 1587-1602.

Boorman Scott A. and Paul R. Lebitt (1980). *The Genetics of Altruism*, New York, NY: Academic Press.

Bradburn Norman M. (1969). *The Structure of Psychological Well-Being*, Chicago, IL: Aldine Publishing Company.

Buraschi Andrea and Francesca Cornelli (2003). "Donations", working paper, available online at: http://faculty.london.edu/aburaschi/Donations.pdf.

Burt Ronald S. (1983). "Corporate philanthropy as a cooptive relation", *Social Forces*, Vol. 62 (December), pp. 419-449.

Campbell A., Converse P. E. and Rodgers W. L. (1976). *The Quality of American Life: Perceptions, Evaluations and Satisfactions*, New York: Russell Sage Foundation.

Campbell A., Converse P. E. and W. L. Rodger (1976). "Subjective measures of well-being", *American Psychologist*, Vol. 31 (February), pp. 117-124.

Casas F., Gonzalez M., Figuer C. and Germa Coenders (2004). "Subjective well-being, values and goal achievement: The case of planned versus by chance searches on the internet", *Social Indicator Research*, Vol. 66, pp. 123-141.

Chen Mao and Jaswinder P. Singh (2001). "Computing and using reputations for internet ratings", in: *Proceedings of the 3rd ACM Conference on Electronic Commerce*, October.

Clough Shepard B. (1960). "Philanthropy and the welfare state in Europe", *Political Science Quarterly*, Vol. 75 (Mar), pp. 87-93.

Cowles Mary K. (1996). "Accelerating monte carlo markov chain convergence for cumulative-link generalized linear models", *Statistics and Computing*, Vol. 6 (June), pp. 101-110.

Cunningham Michael R., Steinberg J. and Grev R. (1980). "Wanting to and having to help: Separate motivations for positive mood and guilt induced helping", *Journal of Personality and Social Psychology*, Vol. 38, pp. 181-192.

Dellarocas Chrysanthos (2003). "The digitization of word of mouth: Promise and challenges of online feedback mechanisms", *Management Science*, Vol. 49 (October), pp. 1407-1424.

Dellarocas Chrysanthos (2005). "Reputation mechanism design in online trading environments with pure moral hazard", *Information Systems Research*, Vol. 16, No. 2, pp. 209-230.

Dellarocas Chrysanthos and Ritu Narayan (2005). "What motivates people to review a product online? A study of the product-specific antecedents of online movie ratings", working paper, available online at: http://www.womma.org/content/dellarocas.pdf.

DeNeve Kristina M. and Harris Cooper (1998). "The happy personality: A meta-analysis of 137 personality traits and subjective well-being", *Psychological Bulletin*, Vol. 24, No. 2, pp. 197-229.

Diener E. D. and Richard E. Lucas (1999). "Personality and subjective well-being", in: Kahneman D., E. Diener & Norbert Schwarz (Eds.), *Well-Being: The Foundations of Hedonic Psychology*, Russell Sage Foundation, New York, pp. 213-229.

Diener E. D. and Richard E. Lucas (2000). "Subjective well-being: The science of happiness, and a proposal for a national index", *American Psychologist*, Vol. 55 (January), pp. 34-43.

Diener E. D., S. Oishi and Richard E. Lucas (2003). "Personality, culture, and subjective well-being: Emotional and cognitive evaluation of life", *Annual Review of Psychology*, Vol. 54, No. 1, pp. 403-425.

Diener E. D. and Richard E. Lucas (1984). "Subjective well-being", *Psychological Bulletin*, Vol. 95, pp. 542-575.

Diener E. D. and Marissa Diener (1995). "Cross-cultural correlates of life satisfaction and self-esteem", *Journal of Personality & Social Psychology*, Vol. 68 (April), pp. 653-663.

Diener E. D. and William Tov (in press), "Culture and subjective well-being", in: S. Kitayama & D. Cohen (Eds.), *The Handbook of Cultural Psychology*, New York, NY: Guilford Press.

Diener E. D., Eunkook M. Suh, Richard E. Lucas and Heidi L. Smith (1999). "Subjective well-being: Three decades of progress", *Psychological Bulletin*, Vol. 125 (March), pp. 276-303.

Diener E. D., Scollon C. N. and Richard E. Lucas (2003). "The evolving concept of subjective well-being: The multifaceted nature of happiness", *Advances in Cell Aging and Gerontology*, Vol. 15, pp. 187-219.

Duncan Brian (2004). "A theory of impact philanthropy", *Journal of Public Economics*, Vol. 88 (August), pp. 2159-2180.

Edwards Yancy D. and Greg M. Allenby (2003). "Multivariate analysis of multiple response data", *Journal of Marketing Research*, Vol. 40 (August), pp. 321-334.

Ellingsen Tore and Magnus Johannesson (2004). "Generosity", working paper, available online at: http://www.iew.unizh.ch/seminars/economics/ss04/downloads/ellingsen.pdf.

Fan M., Tan Y. and Whinston A. B. (2005). "Evaluation and design of online cooperative feedback mechanisms for reputation management", *IEEE Transactions on Knowledge & Data Engineering*, Vol. 17 (February), pp. 244-254.

Frank Robert H. (1997). "The frame of reference as a public good", *The Economic Journal*, Vol. 107 (November), pp. 1832-1847.

Frey Bruno S. and Alois Stutzer (2001). *Happiness and Economics: How the Economy and Institutions Affect Well-Being*, Princeton and Oxford: Princeton University Press.

Friedman Eric J. and Paul Resnick (2001). "The social cost of cheap pseudonyms", *Journal of Economics & Management Strategy*, Vol. 10 (Summer), pp. 173-199.

Glazer Amihai and Kai A. Konrad (1996). "A signaling explanation for charity", *The American Economic Review*, Vol. 86 (September), pp. 1019-1028.

Hausman Daniel M. and Michael S. Mc Pherson (1996). *Economic Analysis and Moral Philosophy*, Cambridge, UK: Cambridge University Press.

Hennig-Thurau Thorsten F., Kevin P. Gwinner, Gianfranco Walsh and Dwayne D. Gremler (2004). "Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the internet?", *Journal of Interactive Marketing*, Vol. 18, No. 1, pp. 38-52.

Isen Alice M. and Paula F. Levin (1972). "Effect of feeling good on helping: cookies and kindness", *Journal of Personality and Social Psychology*, Vol. 21 (March), pp. 384-388.

Kahn Charles H. (1981). "Aristotle and altruism", *Mind*, Vol. 90 (January), pp. 20-40.

Kahneman D., E. Diener and Norbert Schwarz (Eds.) (1999). *Well-Being: The Foundations of Hedonic Psychology*, New York, NJ: Sage Found.

Lucas Richard E. and Frank Fujita (2000). "Factors influencing the relation between extraversion and pleasant affect", *Journal of Personality & Social Psychology*, Vol. 79, No. 6, pp. 1039-1056.

Lucas Richard E., Diener E. D. and Eunkook Suh (1996). "Discriminant validity of well-being measures", *Journal of Personality & Social Psychology*, Vol. 71 (September), pp. 616-628.

Lyubomirsky S., King L. and Ed Diener (2005). "Is happiness a strength? An examination of the benefits and costs of frequent positive affect", *Psychological Bulletin*, Vol. 131, pp. 294-306.

Markus Hazel R. and Shinobu Kitayama (1991). "Culture and the self: Implications for cognition, emotion, and motivation", *Psychological Review*, Vol. 98 (April), pp. 224-253.

Martin Mike W. (1994). *Virtuous Giving: Philanthropy, Voluntary Service, and Caring*, Bloomington, IN: Indiana University Press.

Mescon Timothy S. and Donn J. Tilson (1987). "Corporate philanthropy: A strategic approach to the bottom-line", *California Management Review*, Vol. 29 (Winter), pp. 49-61.

Monroe Kristen R. (1994). "A fat lady in a corset: Altruism and social theory", *American Journal of Political Science*, Vol. 38 (November), pp. 861-893.

Mooradian Todd A. and James M. Olver (1997). "'I can't get no satisfaction': The impact of personality and emotion on postpurchase processes", *Psychology & Marketing*, Vol. 14 (July), pp. 379-393.

Oishi S., Diener E., Lucas R. E. and Eunkook Suh (1999a). "Cross-cultural variations in predictors of life satisfaction: Perspectives from needs and values", *Personality and Social Psychology Bulletin*, Vol. 25, No. 8, pp. 980-990.

Oishi S., E. Diener, E. Suh and Richard E. Lucas (1999b). "Value as a moderator in subjective wellbeing", *Journal of Personality & Social Psychology*, Vol. 67, No. 1, pp. 157-184.

Oishi S. and Diener E. D. (2001). "Goals, culture, and subjective well-being", *Personality and Social Psychology Bulletin*, Vol. 27, No. 12, pp. 1674-1682.

O'Malley Michael N. and Lester Andrews (1983). "The effect of mood and incentives on helping: Are there some things money can't buy?", *Motivation and Emotion*, Vol. 7, pp. 179-189.

Oswald Andrew J. (1997). "Happiness and economic performance", *The Economic Journal*, Vol. 107 (November), pp. 1815-1831.

Pew Internet and American Life Project (2004). "The use of online reputation and ratingsystems", available online at: http://www.pewinternet.org/pdfs/PIP_Datamemo_Reputation.pdf.

Piliavin Jane A. and Hong-Wen Charng (1990). "Altruism: A review of recent theory and research", *Annual Review of Sociology*, Vol. 16, No. 1, pp. 27-65.

Putnam Robert D. (2000). *Bowling Alone: The Collapse and Revival of American Community*, New York, NY: Simon and Schuster.

Ritzen Jozef M. and Donald R. Winkler (1977). "The production of human capital over time", *The Review of Economics and Statistics*, Vol. 59 (November), pp. 427-437.

Rose Arnold M. (1955). "Factors associated with the life satisfaction of middle-class, middle-aged persons", *Marriage and Family Living*, Vol. 17, pp. 15-19.

Rosenhan D. L., Salovey P. and Hargis K. (1981). "The joys of helping: Focus of attention mediates the impact of positive effect on altruism", *Journal of Personality and Social Psychology*, Vol. 40, No. 5, pp. 899-905.

Rosenhan D. L., B. Underwood and B. Moore (1974). "Affect moderates self-gratification and altruism", *Journal of Personality and Social Psychology*, Vol. 30, pp. 546-552.

Samuelson Paul A. (1993). "Altruism as a problem involving group versus individuals selection in economics and biology", *The American Economic Review*, Vol. 83 (May), pp. 143-148.

Schlegelmilch Bodo B., Love A. and Adamantios Diamantopoulos (1997). "Responses to different charity appeals: The impact of donor characteristics on the amount of donations", *European Journal of Marketing*, Vol. 31, Nos. 7/8, pp. 548-560.

Sharp Frank C. (1923). "Some problems in the psychology of egoism and altruism", *The Journal of Philosophy*, Vol. 20 (February), pp. 85-104.

Sober Elliott and David S. Wilson (1998). *Unto Others: The Evolution and Psychology of Unselfish Behavior*, Cambridge, MA: Harvard University Press.

Stephens Christopher (1996). "Modelling reciprocal altruism", *The British Journal for the Philosophy of Science*, Vol. 47 (December), pp. 533-551.

Suh E., Diener E., Oishi S. and Harris C. Triandis (1998). "The shifting basis of life satisfaction judgments across cultures: Emotions versus norms", *Journal of Personality & Social Psychology*, Vol. 74 (February), pp. 482-493.

Sundaram D. S., Kaushik Mitra and Cynthia Webster (1998). "Word-of-mouth communications: A motivational analysis", *Advances in Consumer Research*, Vol. 25, No. 1, pp. 527-531.

Varadarajan Rajan P. and Anil Menon (1988). "Cause-related marketing: A coalignment of marketing strategy and corporate philanthropy", *Journal of Marketing*, Vol. 52 (July), pp. 58-74.

Veenhoven R. (1991). "Questions on happiness, classical types, western answers and blind spots", in: F. Stack M. Argyle & N. Schwartz (Eds.), *Subjective Well-being: An Interdisciplinary Perspective*, Elmsford, NY: Pergamon Press.

Wilson W. (1967). "Correlates of avowed happiness", *Psychological Bulletin*, Vol. 67, No. 4, pp. 294-306.

Wright S. (1945). "Tempo and mode in evolution: A critical review", *Ecology*, Vol. 26, No. 4, pp. 415-419.