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Usage de Facebook et satisfaction : les Likes font-ils notre bonheur ?

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FACEBOOK USE AND INDIVIDUAL WELL-BEING: LIKE ME TO MAKE ME HAPPIER!

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Mots clés : Facebook, réseaux sociaux, satisfaction, comparaison sociale

1. INTRODUCTION

Social network sites (SNS) like Snapchat, Twitter, Facebook, or LinkedIn, have built their business models around the monetization of users data. They collect large amounts of data related to their users' profiles and behaviors and convert this data into valuable services (recommendation, matchmaking, targeted advertising, etc.). These data-based business models are innovative, but challenging. Digital markets are characterized by a rapid pace of innovation and surmountable barriers to entry. Even the most dominant SNSs are not protected from competition or new entrants (Evans, 2017). Moreover, users' needs are difficult to anticipate and satisfy. Individuals typically use more than one social network site (multi-homing) and can easily switch from a social network to another when they distrust the service or find better services elsewhere. For example, the social network MySpace was previously dominant but collapsed within a few years of Facebook entering the market, in 2011. Such considerations

therefore raise questions about the viability of social network revenue models. The value proposition of social networks is to provide tools and services that help users to maintain their existing social ties and create new ties. Most of these services are offered free of charge to reach as many users as possible, creating an audience which is then used to attract advertisers. The main weakness of this two-sided model is that users are not tied by a binding contract, so they can leave or reduce their time on social network sites if they feel unsatisfied or have privacy concerns (Acquisti *et al.* 2015). It is therefore important to study whether social networks increase users' well-being to assess the financial sustainability of their audience-based revenue model. If a SNS makes users happier, its user base is likely to be more active and more loyal, which generates more advertising revenues.

This issue is critical for the most popular social network, Facebook. With its 1.71 billion monthly active users and \$400 billion valuation, Facebook is also the world's most profitable SNS (Source: Facebook as of 7/27/16). 72% of online American adults use Facebook and 48% of Facebook users log on every day. The popularity of Facebook raises questions about its influence on sociability and happiness. For instance, a Facebook research team has created a «Gross National Happiness index» in 18 countries, based on the number of positive and negative words in status updates. The underlying idea is that the content of status updates may reflect the mood of Facebook users day-to-day. But to what extent does Facebook use affect people's mood or well-being?

Few studies have paid attention to the impact of Facebook on individual happiness. While some studies have examined the relationship between online social networks and happiness, they have not focused on Facebook or have used small, non-representative samples of Facebook users. Most of these studies conducted their surveys or experiments on groups of American students. For instance, Kim and Lee (2011) interviewed 391 college students to analyze the effects of the number of Facebook friends on subjective well-being. Sabatini and Sarracino (2014, 2017) used a large representative sample of the Italian population to analyze the impact of using social networks such as Facebook, Twitter and other SNS on well-being, however their data did not allow them to isolate the effects of Facebook, nor to control for the number of Facebook friends and the intensity of online sociability. Similarly, Arampatzis *et al.* (2016) used a Dutch panel of adults aged 15-44 to study the effects of social network

sites, but only have a reported average number of hours spent per week on social media, and do not have detailed information about users' profiles and behaviors on social network sites (e.g. whether users are active or passive).

The originality of our study is to examine the relationship between the usage of Facebook and individual happiness by using a representative sample of 2,000 French Facebook users. We conjecture that Facebook can influence life satisfaction directly and indirectly through its effects on emotions and sociability. Our results show that Facebook significantly impacts individual well-being either by reinforcing individuals' self-esteem or by exacerbating social comparison. Hence, we find a positive relation between receiving a great number of Likes or comments from friends and the level of life satisfaction. By contrast, people that would prefer to receive more Likes tend to declare a lower level of life satisfaction. The latter result reflects the frustration or envy that Facebook may generate. These two effects are more significant for young adults.

Finally, the time spent on Facebook, the intensity of online interactions, as well as the number of Facebook friends, have no direct impact on life satisfaction. Together, these findings underline the ambivalence of Facebook use with both positive and negative psychological effects on well-being.

Our paper is related to the literature on happiness. This literature aims to explain what makes people more satisfied with their life. Research on happiness has made progress in identifying the determinants of individual well-being (Blanchflower and Oswald, 2004; Christoforou, 2011; Dolan, Peasgood and White, 2008; Easterlin, 2001; Helliwell, 2006; Ferreri-Carbonell and Frijters, 2004; Frey and Stutzer, 2002, 2010; Fritjers, Johnson and Shields, 2011; Oswald, 1997). The main predictors of happiness are health, employment status, marital status, sociability, income and education. In particular, poor health, unemployment and lack of sociability are strongly associated with low well-being. Our paper suggests that social network sites like Facebook can also affect well-being, albeit indirectly, through its effects on self-esteem and friendship.

The remainder of this article is organized as follows: Section 1 presents the literature review and research hypotheses; Section 2 describes the data and methodology; Section 3 comments on the econometric results.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

2.1. Relationship between Internet use and well-being

Several studies have investigated the impact of the Internet on happiness and have all concluded that the Internet has welfare effects. Kavetsos and Koutroumpis (2011) analyzed the impact of information technology on subjective well-being, using a pooled cross-sectional data set from several European countries. They find that having a cell phone, a PC or an Internet connection at home is associated with higher levels of well-being. Similarly, using an Italian household survey from 2008, Sabatini (2011) finds a positive relation between online shopping and subjective well-being. From a survey of 7,000 retired persons, Ford and Ford (2009) show that Internet use leads to about a 20% reduction in depression; in other words, being connected increases the mental well-being of elderly Americans. Using data from Luxembourg, Penard *et al.* (2013) find evidence that non-users are less satisfied in their life than Internet users. Moreover, the positive influence of Internet use is stronger for individuals who are young or have difficult living conditions. For those people, the benefits of Internet use can be better employability and greater life empowerment. A clear policy implication is that bridging the digital divide can help reduce social and economic inequalities.

However, the Internet may also have detrimental effects on well-being. Kraut *et al.* (2002) find that for people who have few friends, Internet use tends to strengthen social isolation. The time spent online can actually reduce the time available for face-to-face interaction (Nie, Hillygus and Erbring, 2002).

2.2. Relationship between social network sites and life satisfaction

The growing use of social network sites (Facebook, Twitter, etc.) has increased the role of online sociability in daily life, especially for younger generations. Several studies have shown that the Internet is a means of

building and maintaining social capital (Franzen, 2003; Penard and Poussing, 2010; Shklovski, Kiesler and Kraut, 2006). Individuals can complement their face-to-face interactions with computer-mediated interactions. They can also interact online with people they have never met physically and make new “virtual friends”. Facebook use is likely to reinforce the positive influence of social capital on life satisfaction that is observed in many studies (Helliwell, 2006).

Some studies underline the ambiguous impact of social networks on individual life satisfaction. Social network sites increase transparency, but they provide a distorted perception of real life and overexpose people to the judgments of other users. They can create envy and bitterness because people are exposed to happy times and positive images of their friends. By social comparison, they could feel more depressed or frustrated. Many studies have analyzed the effects of social comparisons of material and living conditions on happiness (Ateca-Amestoy *et al.* (2014), Festinger (1954), Clark and Senik (2004)). In the context of social networks, Krasnova *et al.* (2013) show that passive Facebook use exacerbates feelings of envy (see also Jordan *et al.* (2011)). However, Lin and Utz (2015) find that positive emotions are more prevalent than negative emotions while browsing Facebook. Moreover, Facebook users are happier or experience benign envy when a positive post comes from a strong tie (family and closed friends) rather than a weak tie.

Mukesh and Gonçalves (2013) examine how the number of online friends affects life satisfaction. Traditionally, there is a positive relationship between the number of friends and individual well-being, but this relation is more ambiguous with Facebook friends. The experiments conducted by Mukesh and Gonçalves (2013) show that more Facebook friends induce more ostentatious posts and updates, which decreases life satisfaction. Valenzuela *et al.* (2009) find a positive, but weakly significant, relationship between intensity of Facebook use and college students' life satisfaction or social trust. Ellison *et al.* (2011) conducted a survey on a sample of 267 undergraduate students at a Midwestern university. They show that Facebook use enhances bridging social capital (i.e. enables the creation of social ties between heterogeneous groups), but with greater benefits for users who have lower self-esteem and lower life satisfaction. Kross *et al.* (2013) also focused their experiments on young adults, but show that Facebook use may undermine well-being, rather enhancing it. This negative effect worsened when the young subjects spent more time on Facebook.

Arad *et al.* (2017) studied the impact of Facebook on a sample of 144 employees in a security-related organization. They take advantage of a policy implemented by this organization to ban Facebook use for some groups of workers (i.e. a pseudo-natural experiment that prevents some employees from having a Facebook account). They find that Facebook usage increases users' engagement in social comparison, especially among young employees, and decreases happiness.

Berger and Buechel (2012) show that Facebook can have a therapeutic role. Through several experiments, they observe how people share their emotions after a negative affective experience. Emotionally unstable users tend to share more their emotions on Facebook and feel better after.

The studies of Sabatini and Sarracino (2014, 2017) and Aramzi *et al.* (2016) are the closest to our study in terms of methodology. Sabatini and Sarracino (2017) use a representative sample of the Italian population, and analyze the impact of social network sites on sociability and well-being. They observe that using online social networks like Facebook and Twitter has a positive impact on face-to-face interactions while it decreases social trust. They argue that the use of social networking sites threatens subjective well-being by exposing people to negative online experiences (aggressive behaviors, hate speech, frustration, etc.).

Aramzi *et al.* (2016) study the effects of social network sites on the happiness of young adults using Dutch data. They find no impact of the amount of time spent on social networks on well-being, except for those who feel socially isolated (negative effect).

2.3. Hypotheses

The literature review shows that Internet use in general is positively correlated with individual well-being, but that social network sites have a more ambiguous impact for which it can be difficult to disentangle cause from effect. For instance, presence on social network sites can be explained by offline sociability, which is a strong predictor of well-being. The possibility of reverse causality necessitates caution in our empirical analysis of the relationship between social network sites and happiness. Based on the literature review, we

formulate four hypotheses that relate sociability and Facebook use to life satisfaction.

The first hypothesis concerns the effect of online sociability on well-being. Mukesh and Gonçalves (2013), and Valenzuela *et al.* (2009) show that having more online interactions with friends increases happiness. Therefore, we expect that individuals who have many Facebook friends and intensively use Facebook to interact with their friends should be happier.

H1: Online sociability on Facebook increases individual well-being

On Facebook, people tend to post news and photos that give a favorable image of themselves. Through these posts, Facebook users show ostentatious consumption and happy events like vacations and parties with friends. In return, they expect to receive positive comments and Likes from their friends. Several studies find that Facebook Likes reinforce self-esteem and narcissism (Berger and Buechel, 2012, Mehdizadeh *et al.*, 2010; Chou *et al* 2012). Receiving Likes can also be viewed as a peer recognition mechanism.

By contrast, Facebook users can feel depressed and socially isolated when they do not attract the attention of others or do not receive their approbation. In other words, Facebook use can exacerbate social comparison and frustration if exposure to others' happiness is not counterbalanced by positive feedback (Likes, comments) (Krasnova *et al.*, 2013, Mukesh and Gonçalves, 2013, Arad *et al.*, 2017).

We expect that Facebook use can enhance self-esteem and life satisfaction through peer approbation or recognition, but that individuals can experience negative feelings if their posts are rarely commented on or liked.

H2: Receiving a lot of (not enough) positive feedback (Likes, comments) increases (decreases) individual well being

Finally, the experiences that Facebook users have through their online interactions with friends can influence their well-being. Facebook experience can be positive when it enables the strengthening of existing ties with friends or the creation of new ties (Penard and Poussing, (2010)). For instance, Facebook helps to stay in touch with distant friends. It also facilitates the organization of social activities or the coordination of

communities. However, Facebook can also deteriorate relationships with friends by highlighting divergent views on politics, religion, or other values, or by provoking jealousy (Sabatini and Sarracino (2014)). Facebook also raises privacy issues. The disclosure of personal information or preferences to advertisers or unknown people can be a source of concern and even disutility for Facebook users. Bateman *et al.* (2011) find that the perceived publicness of a social network site negatively influence users' self-disclosure intentions.

H3: Positive social experiences (i.e. strengthening ties with friends and acquaintances) on Facebook increase individual well-being.

H4: Negative social experiences (i.e. damaging some friendships) on Facebook decrease individual well-being.

These last two hypotheses emphasize the importance of enhancing the quality of social interactions on Facebook.

3. DATA AND METHODOLOGY

3.1. Description of data

We use an online survey, conducted by Harris Interactive in 2013, to test our hypotheses. The 2,000 respondents are a representative sample of French Facebook users aged above 15. They were selected by a quota sampling method (quota by gender, age, socioeconomic class and income). The questionnaire contains questions about the motives to use Facebook, the nature and intensity of usage and the perceived impact of Facebook use on sociability and life satisfaction. We also have detailed information about the socio-demographic characteristics and offline sociability.

The mean age of the respondents is 36 (min. 15 and max. 86). 51% of the respondents are female and only 22.05% live alone. 21.95% have a primary education level, 44.45% a secondary education level and 33.6% have a post-secondary degree (tertiary education). Moreover, 21.8% live in a rural area or in small cities (less than 2,000 inhabitants), 51.65% in a medium-sized city (<100,000) and 26.55% in a large city (>100,000). Concerning income,

our survey provides a subjective measure of living conditions. 36.2% declare comfortable living conditions, while 20.1% think that their living conditions are difficult and 43.6% have living conditions that are just sufficient to support their needs. Finally, 35% are in upper socio-professional categories, 31% in lower socio-professional categories and 34% are either students, retired, or unemployed.

Table 1 presents the frequency of Facebook use. Most of the respondents (67.8%) declared they are connected to Facebook every day. Only 5.35% are irregular Facebook users (less than once a month). Moreover, 41.1% of the respondents have more than 100 Facebook friends, 39.45% between 20 and 100 friends and 19.4% less than 20 friends. We will describe later Facebook usage patterns and their effects on sociability and social ties.

Table 1. Frequency of Facebook use

Frequency	Percent	Cumulative
< once a month	5.35	5.35
1 to 3 times a week	6.15	11.50
Weekly	5.90	17.40
Several times a week	14.80	32.20
Daily	21.50	53.70
Several times a day	39.70	93.40
Continuously	6.60	100.00
TOTAL	100.00	

The dependent and independent variables used in our econometric models are presented below.

3.2. Dependent variable

The survey provides a subjective measure of life satisfaction. Participants were asked to estimate their life satisfaction («Do you agree with the statement, 'I am satisfied with my life?'») on a 7-point Likert scale (Diener's Satisfaction With Life Scale). They could choose from 1 (strongly disagree) to 7 (strongly agree). The distribution of answers is rather skewed. Table 2 shows that the responses are concentrated on the values 4, 5 and 6 with few responses at both extremes of the scale. Only 5.9% of the respondents strongly agree that they are satisfied with their life and 4.3% strongly disagree.

Table 2. Distribution of Life Satisfaction (7-point Likert Scale)

Likert Scale	Percent	Cumulative
1	4.30	4.30
2	7.30	11.60
3	10.08	22.40
4	18.35	40.75
5	19.75	60.50
6	33.60	94.10
7	5.90	100.00
TOTAL	100.00	

We choose to recode Life Satisfaction into a three-level variable. The variable LIFESATISFACTION takes the value «1» if participants «strongly disagreed» (1), «disagreed» (2) or «disagreed somewhat» (3) that they are satisfied (22.4% of the respondents). LIFESATISFACTION is equal to «2» if the respondents were «undecided» (4) or «agreed somewhat» (5) (38.1% of the respondents), whereas it is equal to «3» when they «agreed» (6) or «strongly agreed» (7) (39.5% of the respondents).

3.3. Independent variables

The explanatory variables are grouped into 5 categories.

Set 1: socio-demographic variables

The first set of variables corresponds to the socio-demographic characteristics: gender, age, occupational status (a dummy variable that is equal to one if the individual is in the upper occupational level (managers, engineers, entrepreneurs, etc.)), household size¹, and living conditions (whether these conditions are difficult, comfortable or just sufficient to live). Previous works have found a U-shaped curve between well-being and age, where happiness tends to decrease until it reaches a minimum level around the age of 40, and then increases with age (Dolan *et al.* (2008)). Regarding gender, women seem to report higher happiness, but this result is not very robust (Blanchflower and Oswald (2004)). Being single (especially if recently separated or divorced) should decrease happiness

¹ Unfortunately, we have no information about the marital status or the number of children.

(Helliwell (2003)). Having a high occupational status or comfortable living conditions tends to be positively correlated with well-being (Frey and Stutzer (2002), Helliwell (2003), Clark and Oswald (1994)).

Set 2: offline sociability

The second set of variables measures the intensity of offline sociability. The first variable OFFLINESOCIABILITY indicates the frequency of spontaneous meetings with friends. This binary variable is equal to one if the individuals have face-to-face meetings at least once a week (55.2% of the respondents). We also introduce a variable that measures the frequency of cultural outings (at least once a week) and active participation in voluntary organizations (VOLUNTEER). Literature on happiness has shown that offline sociability has a strong influence on individual well-being. The frequency of face-to-face meetings with friends or participation in voluntary organizations tends to be positively correlated with happiness (Becchetti, Pelloni and Rossetti, (2008), Helliwell (2006)). We expect to observe similar correlations in the population of Facebook users.

Set 3: online sociability

A third set of variables measures the nature and intensity of Facebook usage. First, we control for the number of Facebook friends (less than 20, between 20 and 100 and above 100). We also distinguish between a passive and active usage of Facebook. The survey contains questions about the Facebook activity of the respondents and the frequency of posting news or photos on their own wall, viewing their friends' walls, posting comments on friends' walls, and chatting with friends. We build a variable named INTERACTIVEUSE by summing the numbers of regular interactive use (regular interaction on their own wall, regular interaction on friends' walls, and regular chatting). This variable ranges from 0 (no regular interactive usage of Facebook) to 3 (intensive interactions with friends). The average score is 0.9.

We also introduce three binary variables that measure the quantity of personal photos or videos posted on Facebook (no photos/videos, small or large number of photos/videos). These variables indicate whether the individual is active on Facebook and uses this social network for self-promotion and

interaction with friends, as personal photos and videos typically generate comments and Likes from friends.

We construct another binary variable *PASSIVEUSE* that equals 1 if the respondents often look at the walls of their friends without interacting with friends (*INTERACTIVEUSE*=0)². This variable helps us to identify people who do not use Facebook for self-promotion or to develop online sociability (19.5% of the respondents).

We expect a positive impact of the number of Facebook friends on individual well-being (Kim and Lee (2011)). The score of *INTERACTIVEUSE* should also be positively correlated with life satisfaction (Hypothesis 1). By contrast, *PASSIVEUSE* may have the opposite effect because the lack of social interaction on Facebook increases the probability of negative feelings such as envy or frustration (Lin and Utz, 2015).

Set 4: Peer recognition/approbation

Hypothesis 2 is tested by two variables related to Facebook Likes. Facebook users can react to a status update, a link, or a photo posted by a friend by clicking on the “Like” button. They can also comment or share it with their friends. 69.8% declare that their Facebook activity generates a lot of Likes and comments from their friends (*LOT_OF_LIKES*). We expect that receiving a lot of positive feedback increases individual well-being.

The second variable (*NOT_ENOUGH_LIKES*) is a binary variable equal to 1 if the individual complains of receiving not enough Likes (42.8% of the respondents). This variable is a psychological measure of frustration caused by Facebook use and should be negatively correlated with life satisfaction.

Set 5: Social ties and social experiences

The literature review has underlined that Facebook can impact social trust and social ties.

We build on the Granovetter (1973) theory of strong and weak ties. We create several variables that indicate whether Facebook users have had

2 For each value of the *INTERACTIVEUSE* variable, the distribution is: 0 (=47,9%); 1 (=22,9%); 2 (=17,25%) and 3 (=11,95%).

good or bad experiences from their online interactions. Strong ties refer to close friends and are important in providing support and emotional aid. Weak ties represent acquaintances or friends of friends. They can serve to access new ideas or resources that are not present in our social circle (Granovetter (2005)). Clearly, Facebook use may help to maintain or intensify existing social ties with close friends and family (strong-tie), but also to create new ties with virtual acquaintances (weak-tie).

In our survey, we know whether respondents have seen their friends more often, whether their ability to communicate with them has been improved, and whether they have had more friends, since using Facebook. They had three possible answers (positive impact, negative impact, no impact). For the three questions, we sum the number of positive answers to create a variable `POSITIVESTRONGTIES` that ranges from 0 (if the individual has less friends, meets them less frequently and the ability to communicate with them has been reduced) to 3 (if Facebook has strengthened the existing ties with friends). Similarly, the variable `NEGATIVESTRONGTIES` is created by summing the negative answers. A score of 3 means that Facebook has strongly damaged the existing ties with friends. We also introduced a binary variable `POSITIVEWEAKTIES` that is equal to 1 if respondents declare that Facebook has enabled them to make new acquaintances or build new ties.

We also create two binary variables `POSITIVEEXPERIENCES` and `NEGATIVEEXPERIENCES` that respectively indicate whether Facebook use has strengthened their friendships or has damaged some of their friendships.

We test hypothesis 3 with the variables `POSITIVESTRONGTIES` (or `POSITIVEEXPERIENCES`) and `POSITIVEWEAKTIES` and hypothesis 4 with `NEGATIVESTRONGTIES` (or `NEGATIVEEXPERIENCES`).

Table 3 provides descriptive statistics of the dependent and independent variables used in the econometric models. Table 4 summarizes the expected effects of the explanatory variables and how they are related to our research hypotheses. Table 7 (in appendix) shows the correlation matrix between our variables of online sociability and online experience. We do not observe any correlation above .5 and there is no reason to suspect multicollinearity among explanatory variables, according to the VIF values.

Table 3. Definition and descriptive statistics of variables (1/2)

Variables	Description	Mean and S.E.	Min	max
LIFESATISFACTION	"Do you agree with the statement that you are satisfied with your life?", 1="strongly disagree", "disagree", "disagree somewhat"; 2="undecided", "agree somewhat"; 3="agree" and "strongly agree"	2.171 (0.768)	1	3
GENDER	0=male; 1=female	0.502 (0.500)	0	1
AGE	Continuous variable	36.6945 (14.22)	15	86
HIGHSTATUS	"1" for upper occupational levels (managers, engineers, entrepreneurs, etc.); 0 if "not"	0.351 (0.478)	0	1
HOUSEHOLD	Number of persons in the household	2.593 (1.315)	1	10
LOWINCOME	"Do you think that your living conditions are "very difficult" or "difficult"?" (binary)	0.201 (0.401)	0	1
MEDIUMINCOME	"Do you think that your living conditions are just sufficient to support your lifestyle?" (binary)	0.4365 (0.496)	0	1
HIGHINCOME	"Do you think that your living conditions are "comfortable" or "very comfortable"?" (binary)	0.362 (0.481)	0	1
VOLUNTEER	Active participation in voluntary organizations (binary)	0.345 (0.475)	0	1
OFFLINESOCIABILITY	"How frequently do you meet friends?": "1" if at least once a week; 0 if not	0.552 (0.497)	0	1
CULTURALOUTINGS	"How often do you have cultural outings?": 1 if at least once a week; 0 if not	0.128 (0.334)	0	1
SMALLFRIENDS	"How many friends do you have on Facebook?": 1 if the number is <20 (very few friends)	0.194 (0.396)	0	1
MEDIUMFRIENDS	1 if the number of friends is [20;100]	0.3945 (0.4888)	0	1
LARGEFRIENDS	1 if the number of friends is >100	0.411 (0.492)	0	1

Table 3. Definition and descriptive statistics of variables (2/2)

Variables	Description	Mean and S.E.	Min	max
INTERACTIVEUSE	Score for the intensity of interactive uses on Facebook (Chat, online interactions with friends, etc.)	0.933 (1.061)	0	3
PASSIVEUSE	Passive use of Facebook (only “read” or view friends’ wall)	0.195 (0.396)	0	1
NOPHOTOS	No personal photos/videos posted on Facebook	0.153 (0.360)	0	1
PHOTOS ₁	Small number of personal photos/videos posted on Facebook [1;50]	0.576 (0.494)	0	1
PHOTOS ₂	Large number of personal photos/videos posted on Facebook (>50)	0.271 (0.445)	0	1
LOT_OF_LIKES	1 if the individual receives a lot of “Likes” or positive comments	0.698 (0.459)	0	1
NOT_ENOUGH_LIKES	1 if the individual would like to obtain more “Likes” or comments.	0.428 (0.495)	0	1
POSITIVESTRONGTIES	score indicating to what extent Facebook has contributed to improve relations with close friends	0.630 (0.800)	0	3
NEGATIVESTRONGTIES	score indicating to what extent Facebook has damaged relations with close friends	0.132 (0.487)	0	3
POSITIVEWEAKTIES	1 if the individual has made new acquaintances thanks to Facebook	0.380 (0.486)	0	1
POSITIVEEXPERIENCES	1 if Facebook use has helped to strengthen friendships	0.213 (0.409)	0	1
NEGATIVEEXPERIENCES	1 if Facebook use has damaged some friendships	0.123 (0.329)	0	1

Table 4. Hypotheses and expected results

Hypotheses	Variables	Expected sign
H1: Online sociability on Facebook increases individual well-being	FRIENDS INTERACTIVEUSE PASSIVEUSE	+ + -
H2: Receiving a lot of (not enough) positive feedback(likes, comments) increases (decreases) individual well-being	PHOTOS LOT_OF_LIKES NOT_ENOUGH_LIKES	+ + -
H3: Positive social experiences (i.e. strengthening ties with friends and acquaintances) on Facebook increase individual well-being	POSITIVEEXPERIENCES POSITIVEWEAKTIES POSITIVESTRONGTIES	+ + +
H4: Negative social experiences (i.e. damaging some friendships) on Facebook decrease individual well-being	NEGATIVESTRONGTIES NEGATIVEEXPERIENCES	- -

3.4. The econometric model

Our empirical strategy is to estimate the effects of Facebook use on life satisfaction. As our dependent variable LIFESATISFACTION is ordinal, we use an ordered logit model. For each individual $i=1, \dots, 2000$, there is a latent variable Y_i^* that corresponds to the actual level of life satisfaction, but we only observe the discrete ordered variable Y_i that takes the values 1, 2 or 3. We suppose that life satisfaction is influenced by a set of independent variables X_i . The relation between life satisfaction and these independent variables can be written as $Y_i^* = \beta'X_i + \varepsilon_i$ with β the vector of coefficients associated to the explanatory variables and ε_i the error term. Then we have $Y_i = 1$ if $Y_i^* \leq \alpha_1$, $Y_i = 2$ if $\alpha_1 \leq Y_i^* \leq \alpha_2$ and $Y_i = 3$ if $\alpha_2 \leq Y_i^*$. Given $F(\cdot)$, the logistic distribution function of the error term ε , we have $P(Y_i = 1) = F(\alpha_1 - \beta'X_i)$, $P(Y_i = 2) = F(\alpha_2 - \beta'X_i) - F(\alpha_1 - \beta'X_i)$ and $P(Y_i = 3) = 1 - F(\alpha_2 - \beta'X_i)$. Coefficients β and α cut-points are obtained by Maximum Likelihood Estimation (MLE) of the ordered logit model $\ln(L) = \sum_{i=1, N} \sum_{j=0, 3} I_{ij} \ln(P(Y_i = j))$ with $I_{ij} = 1$ if $Y_i = j$ and 0 otherwise.

We also conducted ordinary least squares (OLS) regressions on the initial life satisfaction variable (7- point Likert scale). The results (Table 7 in Appendix) are qualitatively similar to those obtained with the ordered

logit model, but are more questionable given the ordinal nature of our dependent variable.

Our strategy is to estimate our econometric model step-by-step, sequentially introducing the 5 sets of variables: sociodemographics variables (model 1), offline sociability variables (model 2), online sociability variables (model 3), self-esteem variables (model 4); experiences/social ties variables. (model 5). Models 1 and 2 are used to test the control variables (sociodemographic parameters and offline sociability), Model 3 to test hypothesis 1, Model 4 to test hypothesis 2 and Model 5 to test hypotheses 3 and 4.

4. RESULTS

Table 5 displays the results of the econometric estimations. We begin with the first column of results (M1). We find consistent results with previous studies on the determinants of happiness, with age, income and household size having positive impacts on life satisfaction. Moreover, a high occupational status increases well-being.

Table 5. The determinants of life satisfaction with Ordered Logit estimation

Dependent variable: LIFESATISFACTION						
	m1	m2	m3	m4	m5	m5 bis
GENDER	-0.040 (-0.45)	-0.065 (-0.73)	-0.080 (-0.88)	-0.111 (-1.21)	-0.117 (-1.28)	-0.114 (-1.25)
AGE	0.006* (1.92)	0.007** (2.18)	0.011*** (2.94)	0.011*** (2.92)	0.011*** (2.84)	0.011*** (2.81)
HIGHSTATUS	0.241*** (2.62)	0.257*** (2.77)	0.260*** (2.80)	0.241** (2.57)	0.244*** (2.59)	0.238** (2.54)
HOUSEHOLD	0.126*** (3.81)	0.129*** (3.88)	0.127*** (3.81)	0.128*** (3.82)	0.129*** (3.83)	0.128*** (3.83)
LOWINCOME	-1.353*** (-11.36)	-1.355*** (-11.34)	-1.377*** (-11.47)	-1.398*** (-11.58)	-1.390*** (-11.51)	-1.394*** (-11.55)
MEDIUMINCOME	REF.	REF.	REF.	REF.	REF.	REF.
HIGHINCOME	0.978*** (9.84)	0.950*** (9.50)	0.956*** (9.54)	0.961*** (9.55)	0.957*** (9.49)	0.962*** (9.55)

VOLUNTEER		0.163* (1.75)	0.147 (1.56)	0.148 (1.57)	0.149 (1.57)	0.149 (1.58)
OFFLINESOCIABILITY		0.363*** (4.03)	0.333*** (3.67)	0.319*** (3.50)	0.304*** (3.32)	0.319*** (3.50)
CULTURALOUTINGS		-0.082 (-0.62)	-0.123 (-0.92)	-0.101 (-0.75)	-0.109 (-0.81)	-0.103 (-0.76)
SMALLFRIENDS			-0.192 (-1.49)	-0.164 (-1.20)	-0.155 (-1.12)	-0.162 (-1.18)
MEDIUMFRIENDS				REF.	REF.	REF.
LARGEFRIENDS			0.032 (0.31)	0.022 (0.20)	0.013 (0.11)	0.020 (0.19)
INTERACTIVEUSE			0.107** (2.17)	0.074 (1.40)	0.060 (1.09)	0.075 (1.39)
PASSIVEUSE			0.019 (0.15)	0.018 (0.14)	0.009 (0.07)	0.015 (0.12)
NOPHOTOS				0.201 (1.42)	0.209 (1.47)	0.201 (1.42)
PHOTOS ₂				0.127 (1.11)	0.123 (1.08)	0.133 (1.16)
LOT_OF_LIKES				0.431*** (3.88)	0.410*** (3.67)	0.433*** (3.90)
NOT_ENOUGH_LIKES				-0.254*** (-2.68)	-0.250*** (-2.59)	-0.253*** (-2.66)
POSITIVESTRONGTIES					0.069 (1.10)	
NEGATIVESTRONGTIES					-0.185** (-2.10)	
POSITIVEWEAKTIES					-0.038 (-0.36)	
POSITIVEEXPERIENCES						0.016 (0.14)
NEGATIVEEXPERIENCES						-0.110 (-0.81)
α_1	-0.739*** (-3.98)	-0.479** (-2.42)	-0.302 (-1.35)	-0.111 (-0.47)	-0.159 (-0.67)	-0.131 (-0.55)
α_2	1.223*** (6.57)	1.501*** (7.50)	1.685*** (7.46)	1.891*** (7.94)	1.849*** (7.71)	1.872*** (7.82)
Obs	2000	2000	2000	2000	2000	2000
Pseudo R ²	0.0923	0.0973	0.0977	0.0999	0.1049	0.1063

* p<0.10, ** p<0.05, *** p<0.010

The second column (M2) indicates that offline sociability increases life satisfaction. Frequent meeting with friends, as well as participation to voluntary organizations, are positively correlated with life satisfaction. However, volunteering is no more significant when we control for online sociability. Finally, cultural outings have no impact on individual well-being.

The third column (M3) introduces the variables of online sociability. There is no significant relationship between the number of Facebook friends and life satisfaction. The intensity of Facebook activity (INTERACTIVEUSE) is positively correlated with LIFESATISFACTION, but this effect disappears when we introduce the variables that measure self-esteem effects and social experiences.

The fourth column (M4) introduces the variables about the «Likes» and comments received from friends and the number of photos or videos released. We find no relationship between the volume of personal photos and videos and life satisfaction. As expected, Facebook users that receive a lot of Likes/comments are more satisfied with their life. This suggests that individuals are very sensitive to the judgment of their friends. In offline sociability, the judgments of others are less immediate or visible. By contrast, Facebook Likes and comments convey instantaneous social approval (or disapproval) whenever your friends choose (or not) to share or like your posts or status updates. This is confirmed by the fact that individuals who receive insufficient Likes declare lower life satisfaction. This finding highlights the ambivalent effects of Facebook, where social network sites may exacerbate self-esteem and envy through mechanisms of social feedback (Likes, Shares, Retweets, Favorites, etc.).

Finally, the two last columns concern the impact of positive and negative social experiences on Facebook. In column 5, we find that individuals for which Facebook use has reduced the quality of relationships with existing friends (NEGATIVESTRONGTIES) declare lower well-being. This result is weakly supported by our estimations, since in column 6 a negative experience with Facebook (i.e. Facebook use has damaged some of your friendships) is no more significant. Finally, a positive experience of Facebook on strong ties or weak ties does not improve well-being. This effect is likely already captured by the variable OFFLINESOCIABILITY. The following table summarizes our results.

Table 6. Summary of results

Hypotheses	Results
H1: Online sociability on Facebook increases individual well-being	H1 not confirmed
H2: Receiving a lot of (not enough) positive feedback (likes, comments) increases (decreases) individual well-being	H2 confirmed with the variables NOT_ENOUGH_LIKES and LOT_OF_LIKES
H3: Positive social experiences (i.e. strengthening ties with friends and acquaintances) on Facebook increase individual well-being	H3 not confirmed
H4: Negative social experiences (i.e. damaging some friendships) on Facebook decrease individual well-being.	H4 confirmed with « NEGATIVE-STRONGTIES »

5. CONCLUSION

This paper contributes to improve our understanding of the strength and weakness of social network sites. The results show that real friends (i.e. offline sociability) are more valuable than Facebook friends (Helliwell and Huang (2013)). It implies that Facebook use, and more generally Internet use, has a small impact on individual well-being. We find, however, that individuals are very sensitive to the Facebook Likes they receive. Facebook Likes are a form of social approbation that reinforces self-esteem. Conversely, an individual that receives insufficient Likes can feel frustrated and interpret it as a lack of friendships. Social network sites like Facebook therefore serve to reveal the opinions that others have about oneself. As a robustness check, we ran additional regressions with interaction terms (between Age and Likes)³. We show that the youngest Facebook users (aged 15-24) are more sensitive to Likes than other users. This result follows Kross *et al.* (2013) and confirms that digital natives are more concerned by their online sociability.

The viability of social network sites relies on their abilities to convert the power of social ties into revenue and to reduce their negative effects (e.g. social comparison) that can harm the reputation of a site. Our results highlight the critical importance of Likes and comments and allow to

³ Results are available upon request.

understand recent changes in the design of social networks like Facebook. Facebook has launched algorithmic suggestions of activities, and helps its users to organize a birthday party for close friends or to get back in touch with friends. In 2017, Facebook introduced the possibility to choose other reactions beyond just the «Like» button to comment on a post. It would be interesting to study whether these new expressions of feelings increase or decrease Facebook users' well-being.

Our study presents several limitations. Our data are cross-sectional and make causal inference very difficult. Although we observe significant correlations between life satisfaction and some of our independent variables, we need to be cautious about the interpretation. Indeed, some individuals can increase their intensity of Facebook use because they are more satisfied with life and want to show it.

Finally, our analysis should be extended to all kinds of social network sites (e.g. Twitter, Snapchat). The joint influence of these social networks is an open question since many Internet users are active on several social network sites (i.e. multihoming). Nevertheless, this paper provides a better understanding of the interactions between online and offline sociability and the impact of online social networks on well-being. It underlines the ambivalence of Facebook use, with both positive and negative psychological effects on well-being, and emphasizes the emotional role of Facebook friends' Likes.

REFERENCES

- ACQUISTI, A., BRANDIMARTE, L. & LOEWENSTEIN, G. (2015) Privacy and human behavior in the age of information.. *Science*, Vol. 347, Issue 6221, pp. 509- 514.
- ARAD, A., BARZILAY, O., & PERCHICK, M. (2017). The Impact of Facebook on Social Comparison and Happiness: Evidence from a Natural Experiment. Available at SSRN: <https://ssrn.com/abstract=2916158>
- ARAMPATZI, E., BURGER, M.J. & NOVIK, N. (2016). Social Network Sites, Individual Social Capital and Happiness. *Journal of Happiness Studies*, 1-24.
- ATECA-AMESTOY, V., AGUILAR, A. C. & MORO-EGIDO A. (2014). Social Interactions and Life Satisfaction:
- EVIDENCE FROM LATIN AMERICA. *JOURNAL OF HAPPINESS STUDIES*, 15(3), 527-554.
- BATEMAN P. J., PIKE J.C., & BUTLER B.S., (2011). To disclose or not: publicness in social networking sites. *Information Technology & People*, 24(1), 78-100.
- BECCHETTI, L., PELLONI, A. & ROSSETTI F. (2008). Relation Goods, Sociability, and Happiness. *Kyklos*, 61(3), 343-363.

- BERGER, J. & BUECHEL E. (2012). Facebook therapy? Why do people share self-relevant content online ? <http://ssrn.com/abstract=2013148>.
- BLANCHFLOWER, D.G. & OSWALD A.J. (2004). Money, Sex and Happiness: An Empirical Study. *The Scandinavian Journal of Economics*, 106, 393–415.
- FERRERI-CARBONELL, A. & P. FRIJTERS (2004). How important is methodology for the estimates of the determinants of happiness? *The Economic Journal*, 114, 641–659.
- CHOU, H.T. & EDGE N. (2012). “They are happier and having better lives than I am:” The impact of using Facebook on perceptions of others’ lives. *Cyberpsychology, Behavior, and Social Networking*, 15(2): 117–121.
- CHRISTOFOROU, A. (2011). Social Capital across European Countries: Individual and Aggregate determinants of Group Membership. *American Journal of Economics and Sociology*, 70, 699–728.
- CLARK, A. E. & SENIK C. (2010). Who compares to Whom? The anatomy of income Comparisons in Europe. *Economic Journal* 120(544), pp. 573–594.
- DOLAN, P., PEASGOOD, T. & WHITE M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology*, 29, 94–122.
- EASTERLIN, R.A. (2001). Income and happiness: towards a unified theory. *The Economic Journal*, 111, 465– 484.
- ELLISON, N., STEINFELD, C. & LAMPE C. (2007). The benefits of Facebook friends: social capital and college students’ use of online social network sites. *Journal of Computer Mediated Communication* 12, 1143– 1168.
- EVANS, D.S. (2017) “Why the Dynamics of Competition for Online Platforms leads to Spleeless Nights but not Sleepy, Monopolies?”, Available at SSRN: <https://ssrn.com/abstract=3009438>
- FESTINGER, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117–140.
- FORD, G. & FORD S.G. (2009). Internet Use and Depression among the Elderly. *Phoenix Center Policy* 38.
- FRANZEN, A. (2003). Social Capital and the Internet: Evidence from Swiss Panel Data. *Kyklos* 56(3), 341–360.
- FREY, B. & STUTZER A. (2002). What can economists learn from happiness research? *Journal of Economic Literature* 40 (2), 402–435.
- FREY, B. & STUTZER A. (2010). Happiness and Public Choice. *Public Choice* 144, 557–573.
- FRIJTERS, P., JOHNSTON, D.W. & SHIELDS M.A. (2011). Life Satisfaction Dynamics with Quarterly Life Event Data. *The Scandinavian Journal of Economics*, 113, 190–211.
- GRANOVETTER, M. (1973). The Strength of Weak Ties. *American Journal of Sociology* 78, 1361– 1380.
- GRANOVETTER, M. (2005). The Impact of Social Structure on Economic Outcomes. *Journal of Economic Perspectives* 19(1), 33–50.
- HELLIWELL, J.F. & HUANG H. (2013). Comparing the happiness of real and on-line friends. *PloS One* 8(9), e72754.
- HELLIWELL, J.F. (2003). How’s life? Combining indiv idual and national variables to explain subjective well-being. *Economic Modeling* 20, 331–360.
- HELLIWELL, J.F. (2006). Well-being, social capital and public policy: what is new ? *The economic journal* 116, 34–45.

- KAVETSOS, G. & KOUTROUMPIS P. (2011). Technological Affluence and Subjective well being. *Journal of Economic Psychology* 32, 742–753.
- KIM, J. & LEE, J. R. (2011). The Facebook Paths to Happiness: Effects of the Number of Facebook Friends and Self-Presentation on Subjective Well-Being. *Cyberpsychology, Behavior, and Social Networking*, 14(6), 359–364.
- KRASNOVA, H.; WENNINGER, H.; WIDJAJA, T. & BUXMANN, P. (2013). Envy on Facebook: A Hidden Threat to Users' Life Satisfaction? *Wirtschaftsinformatik Proceedings* 2013. Paper 92.
- KRAUT, R., KIESLER, S., BONEVA, B., CUMMINGS, J., HELGESON, V. & CRAWFORD, A. (2002). Internet Paradox Revisited. *Journal of Social Issues*, 58, 49–74.
- KROSS, E., VERDUYN, P., DEMIRALP, E., PARK, J., LEE, D., LIN, N., SHABBLACK, H., JONIDES, J. & YBARRA, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PLOS One* 8(8).
- LIN, R. & UTZ S. (2015). The emotional responses of browsing Facebook: Happiness, envy, and the role of tie strength. *Computers in Human Behavior*, 52, 29–38.
- MEHDIZADEH, S. (2010). Self-presentation 2.0: Narcissism and self-esteem on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 13, 357–364.
- MUKESH, M. AND D. GONCALVES (2013). "The Curse of Online Friends: The Detrimental Effects of Online Social Network Usage on Well-Being". <http://ssrn.com/abstract=2298328>.
- NIE, N.H., HILLYGUS, S.D. & ERBRING L. (2002). Internet Use, Interpersonal Relations, and Sociability in The Internet. In B. Wellman and C. Haythornthwaite (eds). *Everyday Life*. Oxford: Blackwell.
- OSWALD, A. J. (1997). Happiness and economic performance. *Economic Journal* 107 (445), 1815–1831.
- PENARD, T. & POUSSING N. (2010). Internet Use and Social Capital: The Strength of Virtual Ties. *Journal of Economic Issues* 44(3), 569–595.
- PENARD, T., POUSSING, N. & SUIRE R. (2013). Does the Internet make people happier ? *The Journal of Socio-Economics* 32, 105–116.
- SABATINI, F. (2011). Can a click buy a little happiness? The impact of business-to-consumer ecommerce on subjective well-being. WPcomunitè, Department of Communication, University of Teramo.
- SABATINI, F. & SARRACINO, F. (2017) "Online Networks and Subjective Well-Being" *Kyklos*, Vol. 70, Issue 3, pp. 456-480,
- SABATINI, F. & SARRACINO F. (2014). Will Facebook save or destroy social capital? An empirical investigation into the effect of online interactions on trust and networks. Munich Personal RePEc Archive.
- SHKLOVSKI, I., KIESLER, S. & KRAUT R. E. (2006). The Internet and Social Interaction: A Metaanalysis and Critique of Studies, 1995-2003. In R. Kraut, M. Brynin, and S. Kiesler (Eds). *Computers, Phones, and the Internet: The Social Impact of Information Technology*, 251–264.
- STEINFELD, C., ELLISON, N. & LAMPE C. (2008). Social capital, self-esteem, and use of online social network sites: A longitudinal analysis. *Journal of Applied Developmental Psychology* 29, 434–445.
- VALENZUELA, S., PARK, N. & KEE K.F. (2009). Is There Social Capital in a Social Network Site?: Facebook Use and College Students' Life Satisfaction, Trust, and Participation. *Journal of Computer-mediated communication* 14, 875–901.

APPENDIX

Table 7. Correlation matrix

	LIFES.	SMALLFR.	MEDIUMFR.	LARGEFR.	INTERACT.	PASSIV.	LOT OF L.	NOT ENOUGH.	POSITIV.	NEGATIV.
LIFESATISFACTION	1.0000									
SMALLFRIENDS	-0.0681	1.0000								
MEDIUMFRIENDS	0.0108	-0.3960	1.0000							
LARGEFRIENDS	0.0440	-0.4102	-0.6750	1.0000						
INTERACTIONUSE	0.0320	-0.2787	-0.0210	0.2448	1.0000					
PASSIVEUSE	0.0022	-0.0340	-0.0022	0.0295	-0.4327	1.0000				
LOT_OF_LIKES	0.0770	-0.3465	0.0652	0.2137	0.3699	-0.0446	1.0000			
NOT_ENOUGH_LIKES	-0.0373	-0.1893	-0.0304	0.1823	0.2466	-0.0381	0.3093	1.0000		
POSITIVEEXPERIENCE	0.0333	-0.1877	-0.0760	0.2264	0.3185	-0.0963	0.2019	0.1905	1.0000	
NEGATIVEEXPERIENCE	-0.0123	-0.1035	-0.0480	0.1308	0.1686	-0.0697	0.1178	0.0961	0.1493	1.0000

Table 8. The determinants of life satisfaction with OLS estimation

Dependent variable: LIFESATISFACTION ([1;7])						
	m1	m2	m3	m4	m5	m5 bis
GENDER	-0.016 (-0.50)	-0.025 (-0.79)	-0.028 (-0.85)	-0.039 (-1.20)	-0.041 (-1.26)	-0.040 (-1.22)
AGE	0.002** (1.99)	0.003** (2.20)	0.004*** (3.03)	0.004*** (2.97)	0.004*** (2.90)	0.004*** (2.89)
HIGHSTATUS	0.087*** (2.63)	0.094*** (2.84)	0.095*** (2.87)	0.089*** (2.69)	0.089*** (2.68)	0.089*** (2.66)
HOUSEHOLD	0.049*** (4.09)	0.049*** (4.13)	0.049*** (4.07)	0.048*** (4.06)	0.049*** (4.08)	0.048*** (4.06)
LOWINCOME	-0.520*** (-12.32)	-0.514*** (-12.23)	-0.519*** (-12.34)	-0.522*** (-12.44)	-0.517*** (-12.31)	-0.521*** (-12.40)
MEDIUMINCOME	REF.	REF.	REF.	REF.	REF.	REF.
HIGHINCOME	0.348*** (9.88)	0.336*** (9.56)	0.338*** (9.60)	0.340*** (9.68)	0.338*** (9.63)	0.339*** (9.67)
VOLUNTEER		0.065* (1.94)	0.058* (1.73)	0.058* (1.75)	0.059* (1.76)	0.059* (1.76)
OFFLINESOCIABILITY		0.125*** (3.86)	0.114*** (3.49)	0.107*** (3.28)	0.100*** (3.07)	0.107*** (3.28)
CULTURALOUTINGS		-0.033 (-0.69)	-0.047 (-0.99)	-0.038 (-0.81)	-0.041 (-0.86)	-0.039 (-0.82)
SMALLFRIENDS			-0.071 (-1.55)	-0.062 (-1.27)	-0.059 (-1.21)	-0.061 (-1.25)
MEDIUMFRIENDS				REF.	REF.	REF.
LARGEFRIENDS			0.019 (0.49)	0.013 (0.33)	0.010 (0.26)	0.012 (0.31)
INTERACTIVEUSE			0.033* (1.85)	0.020 (1.08)	0.016 (0.84)	0.020 (1.06)

PASSIVEUSE			0.003 (0.06)	0.003 (0.07)	0.000 (0.01)	0.002 (0.05)
NOPHOTOS				0.083 (1.63)	0.085* (1.66)	0.084 (1.64)
PHOTOS ₂				0.050 (1.24)	0.049 (1.23)	0.051 (1.27)
LOT_OF_LIKES				0.154*** (3.88)	0.146*** (3.66)	0.155*** (3.89)
NOT_ENOUGH_LIKES				-0.085** (-2.53)	-0.084** (-2.47)	-0.085** (-2.53)
POSITIVESTRONGTIES					0.022 (0.97)	
NEGATIVESTRONGTIES					-0.070** (-2.16)	
POSITIVeweakties					-0.012 (-0.32)	
POSITIVEEXPERIENCES						0.010 (0.25)
NEGATIVEEXPERIENCES						-0.029 (-0.61)
CONSTANT	1.916*** (28.83)	1.822*** (25.77)	1.755*** (21.89)	1.682*** (20.05)	1.699*** (20.14)	1.687*** (20.01)
Obs	2000	2000	2000	2000	2000	2000
R ₂	0.1840	0.1925	0.1933	0.1975	0.2066	0.2092

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$

Alternative estimations with LIFE CHANGE as dependent variable

To complete our empirical investigation, we have estimated our model using an alternative measure of well-being. The questionnaire contains the following question: «If you had the chance to live your life over again, nothing will change» to which the respondents had to answer on a Likert scale from 1 (strongly disagree) to 7 (strongly agree). We created a dependent variable, named «LIFECHANGE», with the same three-level classification as «LIFESATISFACTION». The distribution of the values for LIFECHANGE is displayed in Table 9. 40.3% of the respondents would like to change their life whereas 26.2% do not want to change the way they live.

Table 9. New dependent variable distribution

LIFECHANGE	Percent	Cum.
1	40.35	40.35
2	33.40	73.75
3	26.25	100.00
TOTAL	100.00	

The results of the ordered logit regression are given by Table 10. The results are rather similar to those obtained with LIFESATISFACTION and confirm the main findings summarized in Table 5.

Table 10. Results with Ordered Logit Regression – LIFECHANGE dependent variable

Dependent variable: LIFECHANGE						
	m1	m2	m3	m4	m5	m5 bis
GENDER	0.052 (0.59)	0.040 (0.45)	0.039 (0.44)	0.032 (0.36)	0.022 (0.24)	0.023 (0.26)
AGE	0.004 (1.28)	0.005 (1.64)	0.007* (1.79)	0.006 (1.49)	0.006 (1.54)	(0.005) (1.24)
HIGHSTATUS	0.112 (1.24)	0.109 (1.21)	0.100 (1.11)	0.083 (0.91)	0.082 (0.90)	0.076 (0.83)
HOUSEHOLD	0.063** (1.97)	0.066** (2.06)	0.064** (1.98)	0.060* (1.85)	0.060* (1.87)	0.059* (1.84)
LOWINCOME	-0.721*** (-6.04)	-0.709*** (-5.93)	-0.710*** (-5.92)	-0.724*** (-6.02)	-0.722*** (-5.99)	-0.715*** (-5.93)
MEDIUMINCOME	REF.	REF.	REF.	REF.	REF.	REF.
HIGHINCOME	0.708*** (7.49)	0.685*** (7.22)	0.687*** (7.23)	0.697*** (7.31)	0.692*** (7.24)	0.699*** (7.31)
VOLUNTEER		0.117 (1.29)	0.115 (1.26)	0.112 (1.23)	0.114 (1.25)	0.118 (1.29)
OFFLINESOCIABILITY		0.247*** (2.81)	0.244*** (2.76)	0.232*** (2.61)	0.229** (2.57)	0.233*** (2.62)
CULTURALOUTINGS		0.223* (1.75)	0.225* (1.75)	0.247* (1.92)	0.252* (1.95)	0.237* (1.83)
SMALLFRIENDS			-0.222* (-1.76)	-0.181 (-1.35)	-0.189 (-1.41)	-0.177 (-1.32)
MEDIUMFRIENDS				REF.	REF.	REF.

LARGEFRIENDS			-0.083 (-0.82)	-0.029 (-0.27)	-0.017 (-0.16)	-0.032 (-0.30)
INTERACTIVEUSE			0.007 (0.15)	0.005 (0.09)	0.013 (0.24)	0.004 (0.07)
PASSIVEUSE			0.008 (0.07)	-0.000 (-0.00)	-0.003 (-0.02)	-0.007 (-0.06)
NOPHOTOS				0.037 (0.27)	0.034 (0.24)	0.042 (0.30)
PHOTOS ₂				-0.176 (-1.59)	-0.179 (-1.62)	-0.163 (-1.47)
LOT_OF_LIKES				0.284*** (2.60)	0.290*** (2.64)	0.287*** (2.62)
NOT_ENOUGH_LIKES				-0.195** (-2.12)	-0.184* (-1.96)	-0.196** (-2.12)
POSITIVESTRONGTIES					0.053 (0.87)	
NEGATIVESTRONGTIES					0.044 (0.51)	
POSITIVEWEAKTIES					-0.153 (-1.51)	
POSITIVEEXPERIENCE						0.097 (0.87)
NEGATIVEEXPERIENCE						-0.278** (-2.09)
CONSTANT ₁	0.069 (0.39)	0.311 (1.62)	0.281 (1.29)	0.314 (1.37)	0.313 (1.36)	0.265 (1.15)
CONSTANT ₂	1.586*** (8.64)	1.837*** (9.34)	1.809*** (8.16)	1.849*** (7.93)	1.850*** (7.87)	1.803*** (7.69)
Obs	2000	2000	2000	2000	2000	2000
Pseudo-R ₂	0.0364	0.0400	0.0408	0.0435	0.0441	0.0452

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$