Selflessness Meets Higher and More Stable Happiness: An Experience Sampling Study of the Joint Dynamics of Selflessness and Happiness

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Abstract
Previous studies have demonstrated the existence of a positive relationship between selflessness and happiness. However, none of these studies yet differentiated the between—and within—person levels of analysis. Moreover, the Selflessness/Selfcenteredness Happiness Model (SSHM) suggests that selflessness might stabilize happiness. In this experience sampling study, we explored the relationships between selflessness and happiness—baseline and stability—at both the within and between-person levels. During five consecutive days, participants responded seven times a day to short questions about happiness and selflessness. Our results showed that more selfless individuals were happier and that more selfless moments of an individual were also happier moments. Moreover, more selfless individuals were more stable from one day to the other. Finally, people becoming more selfless experienced more happiness stability at the following assessment moment and the next day. This study brings new evidence of the importance of selflessness for happiness.

Keywords Selflessness · Happiness · Emotional stability · Experience sampling method · Within and between person analyses

1 Introduction

Positive and negative emotions have been linked to many health outcomes, such as well-being and psychopathology (Fredrickson, 1998; Watson et al., 1988). More recently, researchers have shown that the time-dynamic nature of emotions should be considered. In particular, studies have shown that emotional stability, understood here as the magnitude of
emotional change within a particular time frame, is a factor in psychological health (Gruber et al., 2013) and well-being (Houben et al., 2015). However, while many studies have examined the consequences of emotional stability, few investigated its potential causes. Based on the Selflessness/Self-centeredness Happiness Model (SSHM, Dambrun & Ricard 2011) and an experience sampling study (Larson & Csikszentmihalyi, 1983), this study explores the contribution of selflessness to high and stable happiness.

The study of happiness has been intensified in the past decades (e.g., Linton et al., 2015). Researchers have developed a wide diversity of happiness models (Deci & Ryan, 2008; Huta & Waterman, 2014; Waterman, 1993). Within this variety, the most prominent approach to happiness is subjective well-being (Diener, 2018), which includes positive emotions, negative emotions, and “satisfaction with life.” Diener et al., (1985) construed satisfaction with life as an overarching construct beyond subjective well-being, which occurs as a judgment contrasting actual and expected life circumstances. As Kjell et al., (2016) proposed, “satisfaction only represents one important aspect of cognitive well-being involving the evaluative mindset based on self-centered expectations” (p.894, emphasis in the original). Although important, the judgmental mechanism may not be the only component for the experience of happiness. Indeed, a cross-cultural study showed that the most often expressed lay definitions of happiness are harmony and balance (29.13%), followed by satisfaction (16.55%), and positive emotions (13.92%) (Delle Fave et al., 2016). The role of harmony in the experience of happiness has been emphasized in an emerging generation of models (Dambrun & Ricard, 2011; Kjell et al., 2016; Kjell & Diener, 2020). For example, Kjell et al., (2016) proposed complementing satisfaction with life with “harmony in life,” which emphasizes balance and flexibility.

Noteworthily, the Selflessness/Self-centeredness Happiness Model articulates these two views of happiness. The main hypothesis of the SSHM is that how one construes one’s Self has an impact on the type of happiness experienced. A person experiencing the Self as an independent and permanent entity (i.e., self-centeredness) will experience fluctuating happiness. Egocentric individuals rely primarily on stimulus-induced pleasures to be happy. However, not only do these pleasures depend on the presence of expected stimuli (Alba & Williams, 2013) but, even when the sought stimuli are accessible, hedonic adaptation prevents a sustained experience of pleasure (Armenta et al., 2014). When the desired stimulus is absent or when the undesirable ones are present, afflactive emotions such as anger or fear are generated (Aue & Okon-Singer, 2015; e.g., Bennett et al., 2020). Theoretically, the alternation of satisfaction and dissatisfaction phases that stems from self-centeredness should lead to low quality and fluctuating happiness (Dambrun et al., 2012; Dambrun, 2017).

A central hypothesis in the SSHM is that selflessness—construing an interdependent and ever-changing self—theoretically induces the experience of harmony and reduces the amount of afflactive affect (manifesting in the form of emotional stability). Reducing egocentric focus would promote a sense of harmony by strengthening feelings of connection with others and the world and increasing unconditional benevolent affects (Dambrun & Ricard, 2012). Because in selfless individuals these two processes—harmony feelings and emotional stability—depend less on external stimuli, such persons should experience very stable low arousal feelings, named “Authentic-Durable Happiness” (Dambrun et al., 2012; Dambrun, 2017). In summary, the SSHM predicts that selflessness would be associated with happiness in two ways: selflessness should (1) increase the individual level of happiness and (2) stabilize happiness variations within individuals.
Empirical studies mainly corroborated the main SSHM hypotheses. In self-report questionnaires studies, selflessness appeared positively associated with subjective and psychological well-being (Hanley et al., 2014, 2017). More specifically, selflessness has been associated with the authentic-durable happiness scale and negatively with the fluctuating happiness scale (Dambrun, 2017; Deng et al., 2020). The authentic-durable happiness (AD-H) scale has been developed by Dambrun et al., (2012) to be contrasted with fluctuating happiness, the two happiness measures being separate constructs. However, one could argue that their retrospective nature limits the two measures’ validity by making them vulnerable to recollection biases (Kahneman, 1999). In particular, individuals would be unreliable in accounting for their past happiness fluctuations (see Kernis et al., 1992 for a related discussion on assessing the stability of self-esteem).

Experimental studies using meditation induction confirmed the relationship between happiness and selflessness at the experienced level (Dambrun, 2016; Dambrun et al., 2019). Accordingly, in an experience sampling study (ESM, Larson & Csikszentmihalyi 1983), Pellerin et al., (2020) showed that selflessness and happiness were robustly associated and that enhanced feelings of harmony might explain their relationship. These studies used a more immediate assessment of experienced selflessness and happiness, so they did not suffer strong memory recollection bias. However, if they provided evidence supporting that selflessness increases happiness levels, their design did not allow for proper testing of the stabilization hypothesis. Multiple within-individuals measurements are necessary to infer stability correctly (Jahng et al., 2008). If the existing literature supports a link between averaged happiness and selflessness, strong evidence for the effect of selflessness on happiness stability is still lacking. One aim of this study was to test this “stabilization hypothesis” predicted by the SSHM, using multiple happiness measurements. For that purpose, we meant to run an ESM study with sufficient individuals and enough observations per individual for a correct estimation of happiness stability.

The second aim of this study was to evaluate the relationship between selflessness and happiness at both between-person and within-person levels (Hoffman & Stawski, 2009). The SSHM predicts that individuals fluctuate in their perception of their Self within the selflessness/self-centeredness continuum, and thus in the emergence of the respective psychological functioning, according to at least two—between- and within-person—levels (Dambrun & Ricard, 2011). The first (between-person) level is the basic temperament of the individual, which would be determined by culture, education and religious belief, among other things. It corresponds to trait selflessness, in that it would be relatively stable during the course of existence, like a personality trait. The second (within-person) level refers to the temporary and malleable state of selflessness, which is influenced by contextual and situational variables. In other words, a person who tends to be rather self-centered may experience selflessness momentarily following a particular event, for example, following a transcendental experience in contact with nature (McDonald et al., 2009).

Taking this variability of selflessness into account leads us to refined questions. Are people who are generally more selfless also happier than those who are more self-centered? This type of question is usually referred to as the between-person level of analysis (Hoffman & Stawski, 2009). ESM allows us to investigate the association between temporarily experienced selflessness and momentary happiness by focusing on their relationship at the within-person level of analysis (Hoffman & Stawski, 2009). At the within-person level, the question we address would be: Are momentary changes in selflessness in an individual asso-
associated with changes in happiness in the same direction? Although very helpful to confirm the causal role of selflessness, laboratory studies have limited ecological validity. Using the ESM would combine the advantages of avoiding retrospective memory biases and enabling selflessness and happiness assessment in individuals’ ecological contexts. Another benefit for our purpose is that the longitudinal design of the ESM allows the examination of the between-person and within-person relationships on the same data, thus clarifying each level’s weight in the prediction of the dependent variable (Enders & Tofighi, 2007; Hoffman & Stawski, 2009). Therefore, we meant to examine whether selflessness and happiness levels are associated at both within- and between-person levels.

Moreover, the stability hypothesis might be challenged at the different levels of analysis. Most studies on emotional stability focus on inter-individual differences (Houben et al., 2015), but intra-individual processes are at least as interesting. For example, Hardy & Segerstrom (2017) showed how within-person emotional variability is associated with psychological distress and physical illness. The SSHM predicts that selfless individuals will experience higher mean stability than self-centered individuals (i.e., inter-individual differences). We also wanted to test whether larger within-person changes in selflessness would be associated with reduced happiness fluctuations in the short term (i.e., intra-individual process).

As Jahng et al., (2008) showed, there are several ways to consider stability in intensive longitudinal data, such as ESM studies, whether it is considered in the short or long term. In this study, we focused on relatively short-term stability, such as within a day or a week. We refer to moment-to-moment stability as the differences in happiness observed from one assessment to the next (i.e., within-day stability) and day-to-day stability as the difference in the average level of happiness from one day to the next (i.e., between-day stability). We expected that selflessness would be positively associated with both moment-to-moment and day-to-day stability. Therefore, we expected to observe a positive association at the between-person level between selflessness and both day-to-day and moment-to-moment stability, meaning that not only selfless individuals will see their happiness to be more stable from one moment to another within the same day, but also from one day to another, in comparison with self-centered individuals. We also expected that changes of selflessness for the same person would be respectively associated with greater moment-to-moment and day-to-day stability, so that the happiness of the next moment would be more similar to the current happiness when current momentary selflessness is high and that the happiness of the next day would be more similar to the mean happiness of the current day when the mean selflessness of the current day is high.

In summary, we meant to test four hypotheses, two concerning the relationship between selflessness and happiness levels (one for the between-person level and the other for the within-person level) and two concerning the relationship between selflessness and happiness stability (one for each level of analysis):

- **H1**: Individuals’ average selflessness is positively associated with average happiness (between-person level).
- **H2**: Change in selflessness within an individual would be positively associated with greater happiness (within-person level).
- **H3**: Individual’s average selflessness is positively associated with happiness moment-to-moment and day-to-day stability (between-person level).
● H4: Within-day and between-day changes in selflessness within an individual are associated with a stabilization of happiness for the next moment and the next day, respectively (within-person level).

2 Methods

2.1 Participants & Procedure

All respondents were recruited through social networks. They were immediately invited to respond to an online survey that contained demographics and other variables non-related to this article (N=1030). In their study, Pellerin et al., (2020) found a medium effect size relationship between selflessness and happiness with 63 participants and about seven observations per person. Based on their data (https://osf.io/bdjg3/), we calculated the power for a similar study in terms of sample size and number of observations per individual. We found respectively 95% and 100% chance to detect between-person and within-person effects of selflessness on happiness. Therefore, we sought to recruit about the same sample size. Still, we wanted to increase our statistical power by intensifying the number of observations per person. 246 ESM Volunteers provided their cellphone numbers at the end of the questionnaire. It was clearly explained that this information would only be used to run a one-week ESM study during the lockdown. The ESM study occurred during the second last week before “unlockdown.” Participants were invited by SMS to respond to short online surveys seven times a day (mean time intervals = 1h30) from Monday to Friday and from 9 a.m. to 7:30 p.m. One hundred and two participants responded to at least one observation. To be able to account for happiness stability, we only retained individuals who provided at least five observations, leaving for the analysis 1687 observations (98% of all) over 347 days and 74 individuals (mean number of observations per day = 4.56, mean number of observations per participants = 22.8). Sixty-three participants were women (85.1%). The mean age was 42.8 years old (SD = 14.0). After the end of the data collection, the personal well-being curves of participants were provided upon their demand.

2.2 Material

In each session, the participants had to answer several questions. Other subjective dimensions not directly related to the present hypotheses were assessed and will not be presented here. Answers were registered using analog scales ranging from 0 to 100. The median time for completing a session was 121 s. To assess Cronbach alpha reliability estimates, we used the alpha() function provided in Huang (2017). It provides reliable estimates at the between and within-person levels using the Multilevel Confirmatory Factor Analysis framework (Geldhof et al., 2014).

2.2.1 Happiness

Two items assessed happiness, one for satisfaction (i.e., “At this moment, I feel satisfied.”) and one for inner peace (“At this moment, I feel at peace”). The response scale ranged from
“Not at all” (0) to “A lot” (100). The between-person reliability for happiness assessed by the two items was very satisfactory ($\alpha = 0.98$). The within-person reliability was also very satisfactory ($\alpha = 0.81$). All pairs of responses were averaged into a single measure of experienced happiness.

### 2.2.2 Selflessness

The same three items as in Pellerin et al., (2020) were used to assess experienced selflessness: (a) the first item was derived from the allo-inclusive identity scale, which assesses the degree of connection with others and the natural world (Leary et al., 2008). Perception of the interconnected nature of the Self is an important marker of selflessness in the SSHM (Dambrun & Ricard, 2011). Four couples of circles were shown. In each couple, a circle labeled “you” crossed another circle labeled “others”, with the level of overlap indicating the degree of connection between the two entities. The participants rated their perception of connection with others on a scale ranging from “no connection” (0) to “full connection” (100). (b) The second item was the “perceived body boundaries salience” single-item scale. Dambrun (2016) derived this item from Ataria et al., (2015)’s work which states that the more flexible the sense of boundaries, the weaker the sense of Self, ownership, and agency. The participants indicated their current perception of their body state using a visual analogue scale depicting their own body with boundaries varying from almost inconspicuous (0) to extremely salient (100). (c) The third item assessed oneness (“At this moment, I feel the unity with everything”). This item was derived from the oneness component of the mystical orientation scale (Francis & Louden, 2000). The feeling of oneness is a marker for unified consciousness and has been discussed and used as an important component of selflessness in a previous study (Dambrun et al., 2019). The between-person reliability for selflessness assessed by the three items was satisfactory ($\alpha = 0.68$). The within-person reliability was moderately satisfactory ($\alpha = 0.59$). Note that, although the reliability estimate might be lower than the traditional acceptable criteria for trait-level measures, Nezlek (2017) suggested relaxing the state-level reliability standards because ESM studies generally use fewer items per construct than classical surveys. The three items were averaged into a single measure of experienced selflessness.

Using multilevel factor analysis on the same items, Pellerin et al., (2020) supported the validity of the happiness and selflessness constructs at the within-person level. Using the lavaan package (Rosseel, 2012) on our data provided similar results. The model where happiness and selflessness items loaded on their respective factor (CFI=0.99, SRMR=0.06, RMSEA=0.04, AIC=69667.97) fitted far better than the model where all items loaded on a single factor (CFI=0.93, SRMR=0.10, RMSEA=0.15, AIC=69844.03). This confirmed the distinction between happiness and selflessness constructs at the momentary level using our methodology.

### 2.3 Data analysis

The data and scripts which support the analyses are posted on the Open Science Framework: https://osf.io/7csk9/. We used R (R Core Team, 2020) for all our analyses. Five multilevel models served to test our hypotheses, with happiness scores (Model 1), the moment-
To predict happiness levels (H1 & H2), model 1 was fitted using linear mixed models with the \textit{lmer} function of the \textit{lme4} package (Bates et al., 2015). To examine both between- and within-individual effects, the classical operation in multilevel analyses is to use the cluster means and the individual scores centered within cluster as predictors in the model (Enders & Tofighi, 2007). Here, observations were nested within individuals. Therefore, individual selflessness means served as our cluster mean predictor, which we call “person-mean selflessness.” It was entered in all models to account for between-person effects. Averaging all observations within each individual eliminates any intra-individual variability. Therefore, estimates from person-mean selflessness should be interpreted as “pure” between-person relations between selflessness and the dependent variable. Then, for each individual, selflessness person-means were subtracted from their individual selflessness scores (i.e., “Centering within cluster”; Enders & Tofighi 2007) to obtain measures of “within-person selflessness changes,” which were entered as a predictor in all models as an account for the within-person effect of selflessness. Centering within cluster is meant to clear any inter-individual differences in the variable. Thus only the intra-individual variability of selflessness is captured by this variable. Therefore, person-mean selflessness and within-person selflessness changes respectively capture inter- and intra-individual variability of selflessness and, together, capture the full variability of selflessness. Note that the selflessness score has been standardized before the computation of these two variables. Significant effects of person-mean selflessness on happiness scores in model 1 would indicate that inter-individual differences in selflessness is associated with person-mean levels of happiness accordingly (H1). Any effect of within-person selflessness changes on happiness indicates that temporary changes of selflessness below or above the individual’s average are associated with temporary changes in happiness (H2).

To compute the moment-to-moment and day-to-day stability of happiness (H3 & H4), two different indicators were used: the “squared successive differences” (SSD) and the “acute changes” (AC). Both indicators are based on the successive differences of the standardized score of happiness between two consecutive measurement occasions (for moment-to-moment stability) and between two consecutive days (for day-to-day stability) (for more details about these two indicators, see Jahng et al., 2008). The successive within-day differences have been adjusted for random time intervals using the method proposed in Jahng et al., (2008). SSD is obtained by squaring the successive difference. The other indicator uses a cut point provided as a parameter by the researchers to define AC. We used two standard deviations as the cut point for acute changes so that 6.13% of the largest adjusted successive within-day differences were counted as AC and 6.02% of the successive between-day differences. Both measures were coded in the direction of instability in such a way that (1) a higher SSD value indicates a greater successive difference and (2) AC was coded 1 to indicate the presence of an acute change and 0 otherwise. In summary, four dependent variables accounted for happiness instability: the moment-to-moment SSD (MtM-SSD; model 2), the

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1 This method allows to (1) test whether time interval is associated with higher or lower successive differences and (2) adjust the successive difference when it is the case. In fact, in our data (but also in Jahng et al., 2008) the successive difference was positively associated with longer time intervals. Therefore, using the recommended method, we adjusted the successive difference in order to attenuate the correlation with time intervals (the R code for this transformation is available in https://osf.io/7csk9/).
moment-to-moment AC (MtM-AC; model 3), the day-to-day SSD (DtD-SSD; model 4), and the day-to-day AC (DtD-AC; model 5).

To illustrate the instability variables, Fig. 1 depicts the happiness levels during the ESM study with the AC and SSD for four individuals with different levels of happiness (in)stability. The mean squared successive difference (MSSD) and the probability of acute change (PAC) reflect individual means of instability. The first individual (see Fig. 1a) had a very low moment-to-moment instability. Indeed, we can see that this person presented only weak SSD during the whole week (MtM-MSSD = 0.12) and no acute change (MtM-PAC = 0.00). Figure 1b displays these results for an individual with high moment-to-moment instability. We can see that the SSD were stronger on much more occasions (MtM-MSSD = 1.31). Acute changes were also numerous. This person had almost 1/3 chance to experience an acute change between two occasions (MtM-PAC = 0.27). In the same way, Fig. 1c depicts individuals with low day-to-day instability (DtD-MSSD = 0.05; DtD-PAC = 0.00) and Fig. 1d and high day-to-day instability (DtD-MSSD = 2.72; DtD-PAC = 0.50).

Jahng et al. (2008) proposed to use generalized multilevel models to infer group differences in SSD and AC. It has the advantage of reducing the error of estimation of individual means and taking into account inter-individual differences in the number of observations. Additionally, the proposed models enabled to test specifically for the within and between-person effects, as done with model 1. The distributions of squared successive differences (SSD) and acute changes (AC) theoretically do not follow normality. Consequently, MtM-

![Figure 1](#)

Figure 1 Scores, squared successive differences (SSD), and acute changes (AC) of happiness for individuals with low moment-to-moment (MtM) instability (a), high (MtM) instability (b), low day-to-day (DtD) instability (c), and high (DtD) instability (d).
SSD (model 2) and DtD-SSD (model 4) were modeled with gamma error distribution and log link and MtM-AC (model 3) and DtD-AC (model 5) with a binomial distribution as proposed by Jahng et al., (2008). Selflessness person-mean and within-person changes were entered as predictors. Note that, for models 2 and 3, one observation per participant was treated as missing because the last observation cannot be used to compute the moment-to-moment successive difference, which left 1653 observations in those models. A Similarly, on a total of 347 aggregated days available, 273 observations were retained for the day-to-day stability models (models 4 and 5).

3 Results

Table 1 presents the descriptive statistics of the study variable (within- and between-person correlations are presented in Supplementary Material 1). In particular, the intra-class correlations (ICC), which describe the part of the total variance explained by the grouping variable (here the individuals), provide useful insights. Whereas respectively 47% and 61% of the variance of happiness and selflessness were explained by inter-individual differences, this percentage decreased for the stability measures. In particular, moment-to-moment stabilities variability was mostly explained by within-person changes (respectively 89% and 92% of the total variability for MSSD and PAC indices). Day-to-day stabilities variance was associated with within-person variability, but a substantial proportion of variance was also associated with inter-individual differences.

Table 2 presents the results of the three multilevel models. Model 1 is the linear mixed model that regressed happiness scores on selflessness at both within and between levels. In accordance with H1 and H2, we see that both person-mean selflessness and within-person selflessness changes were positively associated with happiness.

The four remaining generalized multilevel models depict the results with MtM-SSD (model 2), MtM-AC (model 3), DtD-SSD (model 4), and DtD-AC (model 5) as dependent variables. Let’s first consider the moment-to-moment stability, that is, when stability is inferred from the difference between two measurement occasions within a day. Both measures of happiness moment-to-moment instability (MtM-SSD and MtM-AC) were nega-

| Variables                        | M     | SD   | ICC  |
|----------------------------------|-------|------|------|
| Happiness                        | 67.71 | 19.65| 0.47 |
| Selflessness                      | 54.10 | 19.44| 0.61 |
| Moment-to-moment stability        |       |      |      |
| MSSD                              | 0.41  | 0.33 | 0.11 |
| PAC                               | 0.06  | 0.09 | 0.08 |
| Day-to-day stability              |       |      |      |
| MSSD                              | 0.46  | 0.76 | 0.34 |
| PAC                               | 0.06  | 0.17 | 0.28 |

Note. \( N = 74; \) SSD = squared successive differences of happiness, AC = acute changes of happiness

2 Controlling for age and gender reveals the same basic findings.
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respectively associated with within-person selflessness changes, meaning that positive deviations from the person’s mean of selflessness precede subsequent differences of happiness and the chance to experience acute change. However, person-mean selflessness was not associated with moment-to-moment instability.

Interestingly, these results differ with day-to-day stability. Day-to-day stability was positively associated with selflessness at both within- and between-person levels in model 4. This indicates two things: first, selfless individuals generally had fewer happiness fluctuations and, second, days with higher mean scores of selflessness predicted fewer fluctuations of happiness the next day. However, day-to-day AC was not predicted by any level of selflessness.

4 Discussion

The first two hypotheses predicted that selflessness and happiness would be associated at both within-person and between-person levels. They have been verified. Thus, individuals with higher mean selflessness scores also had higher happiness scores (H1), and greater momentary selflessness is related to greater momentary happiness (H2). This corroborates what previous studies found with different methods: not only the two variables are associated when treated as traits (Dambrun & Ricard, 2012; Deng et al., 2020; Hanley et al.,

| Table 2 Results of the multilevel models |
|-----------------------------------------|
| Predictor                               | b   | SD  | Lower CI | Upper CI | β  |
| Model 1                                 |     |     |          |          |    |
| Intercept                               | −0.05 | 0.06 | −0.18    | 0.07     |    |
| Within-person selflessness changes      | 0.62*** | 0.02 | 0.57    | 0.67     | 0.38 |
| Person-mean selflessness                | 0.60*** | 0.08 | 0.45    | 0.75     | 0.47 |
| Model 2                                 |     |     |          |          |    |
| Intercept                               | −0.62*** | 0.17 | −0.96  | −0.28    |    |
| Within-person selflessness changes      | −0.23*** | 0.06 | −0.35  | −0.11     | −0.14 |
| Person-mean selflessness                | −0.13 | 0.22 | −0.56  | 0.30     | −0.10 |
| Model 3                                 |     |     |          |          |    |
| Intercept                               | −3.36*** | 0.25 | −3.84  | −2.88    |    |
| Within-person selflessness changes      | −0.39* | 0.16 | −0.70  | −0.08     | −0.24 |
| Person-mean selflessness                | −0.27 | 0.25 | −0.76  | 0.21     | −0.21 |
| Model 4                                 |     |     |          |          |    |
| Intercept                               | −1.60*** | 0.15 | −1.90  | −1.30    |    |
| Within-person selflessness changes      | −0.41* | 0.19 | −0.78  | −0.03     | −0.16 |
| Person-mean selflessness                | −0.40* | 0.19 | −0.77  | −0.03     | −0.32 |
| Model 5                                 |     |     |          |          |    |
| Intercept                               | −7.59*** | 1.63 | −10.78 | −4.40    |    |
| Within-person selflessness changes      | −0.80 | 0.67 | −2.11  | 0.51     | −0.30 |
| Person-mean selflessness                | −0.97 | 1.01 | −2.96  | 1.01     | −0.78 |

Note. The dependent variables for each model are: model 1 = Happiness scores (Nobs = 1613); model 2 = moment-to-moment successive squared difference (Nobs = 1613); model 3 = moment-to-moment acute change (Nobs = 1613); model 4 = day-to-day successive squared difference (Nobs = 273); model 5 = day-to-day acute change (Nobs = 273). 74 individuals. b = unstandardized estimates, SD = standard deviation, CI = 95% confidence intervals; β = standardized estimates ***p < .001.
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Selflessness improvements are associated with higher happiness levels. Finally, both effect sizes were moderate (see Table 2). All in all, these results strongly corroborate the general hypothesis of the SSHM, namely, that selflessness is substantially associated with higher levels of happiness (Dambrun & Ricard, 2011).

The last two hypotheses predicted that selflessness would be positively associated with moment-to-moment and day-to-day happiness stability at both within-person (H3) and between-person levels (H4). Moment-to-moment fluctuations of happiness were associated with selflessness only at the within-person level (H3), the between-person effect of selflessness on happiness moment-to-moment stability being not significant (H4). Selflessness significantly predicted day-to-day stability of happiness at both within- and between-person levels (H3 and H4) for one of the two indicators of stability used in this study (for SSD but not for AC). In summary, when people experienced more selflessness than usual, they tended to see their current happiness as more similar to the next assessment period: happiness of the current moment and around two hours after were more similar; happiness of the current day and the day after were more similar. However, highly selfless individuals appeared to have higher day-to-day (between-days) happiness stability than more self-centered individuals. Still, no differences appeared for the moment-to-moment (within-days) happiness stability.

These results add to a previous study showing a relationship between evaluated selflessness and fluctuating happiness (Dambrun, 2017). The main strength of the present study is that it operationalized the stability of happiness from individuals’ actual experiences of happiness. Thus, it offers new evidence showing an association between selflessness and stability at the experienced level. Furthermore, this method provided a first overview of the period during which the stability of happiness must be considered. More selfless individuals did not differ from others in happiness when stability was considered within a day, but they generally experienced fewer fluctuations from one day to the other. One would expect the same to be true when considering even longer periods, such as weeks or months. Future studies could extend the data collection period to test whether this result works on stability within longer time frames. Finally, the SSHM assumptions about how fluctuations of happiness work should be refined to allow precise predictions of which type of emotional stability—when considered in small or long time periods—is associated with selflessness. Because the approach/avoidance motivation is a fundamental aspect of motivation which exists in various degrees from more contextual motives to more basic and stable temperaments (Elliot, 2006), and because this motivation is one element that contributes to the fluctuation of happiness in self-centered psychological functioning (as supposed in the SSHM, Dambrun & Ricard, 2011) we propose that experiencing selflessness should reduce the fluctuations of happiness in many degrees, such as within a day, a week, a month, a year, a decade, etc.

Emotional stability is an important factor for psychological health (Gruber et al., 2013) and well-being (Houben et al., 2015). For example, Gruber et al., (2013) showed that greater variability in emotions is associated with decreased life satisfaction and functioning and increased depression and anxiety symptoms. Importantly, these results hold when the mean level of emotions is controlled for. These works suggest that stabilizing emotions would be an important feature for the success of psychological interventions. However, few studies

3 While the planned mean interval was 1 hour and 30 minutes, missing occurrences makes the observed mean time interval longer (M=1.88, SD=1.25).
have investigated potential predictors of emotional stability. While the classic set-point theory of life satisfaction stability suggested that an individual’s happiness is somehow stable and mainly determined by fixed personality (Parducci & Helson, 1965), recent data tend to refute this assumption in showing life satisfaction can lastly change (Headey & Muffels, 2017). Our results suggest that targeting a sustained reduction in self-centeredness—for example, through meditation practice (Dambrun, 2016; Dambrun et al., 2019)—could be an important way to stabilize and enhance happiness lastingly.

Using confirmatory analyses at the within-person level, Pellerin et al., (2020) showed that the selflessness factor is distinct from the happiness factor. Moreover, our data show that 61% of the variance in selflessness could be attributed to situational factors and 39% to inter-individual differences. Thus, there is evidence that selflessness varies at both within- and between-person levels, as expected. While the methodology used and the tool proposed to account for the momentary experience of selflessness make substantive contributions, we see at least two ways to further develop measures of selflessness. Firstly, the items used refer essentially to the concept of interdependence, with the dissolution of bodily boundaries, the feeling of connection to others, and the sense of unity (Pellerin et al., 2020). However, in the SSHM, selflessness is also characterized by impermanence and outsider phenomenology (Dambrun & Ricard, 2011). A Self construed as impermanent is seen as constantly subject to the variations of causes and conditions of its inner and outer environment and thus is seen as changing momentarily. Outsider phenomenology refers to a way of relating to one’s own experience not as a first-person subject but rather as a third-person subject. Secondly, it will also be interesting to check the distinction between selflessness and self-centeredness at the within-person level. Using self-report questionnaires and factor analyses, Dambrun (2017) showed that strong egocentrism and strong materialism constituted a common factor (i.e., self-centeredness) which was differentiated from a factor regrouping self-transcendence and the feeling of connection to others (i.e., selflessness). Some items of materialism and egocentrism might be designed to measure self-centeredness at the momentary level. In this way, it would be possible to verify whether self-centeredness fluctuates and if its distinction with selflessness holds at the within-person level.

This study is not without limitations. The generalizability of the results is limited because the participants were mostly female. Moreover, the number of participants included in the ESM analyses was seventy-six, which can be low for individual differences research, even though the longitudinal design enhances statistical power. The high standard errors found with day-to-day acute change might suggest that statistical power is insufficient to detect the effect at the between-day level. Besides, all participants were recruited during the second week of the first lockdown in France (the first week of May 2020). The importance of selflessness might have been enhanced by a situation where social interactions and activities are reduced to a minimum. On the other hand, the findings reported here will constitute interesting evidence to compare with when the study can be replicated under more “normal life” circumstances, with a larger sample including more male participants and with more days of observations. Furthermore, as mentioned in Pellerin et al., (2020), one of the limitations of this approach is the correlational nature of the analysis, which makes it impossible to conclude about the directionality of the effects. It may be that happiness influences selflessness or that their relationship is explained by a third factor that would influence both, such as satisfaction of one’s needs or sense of harmony. In addition, positive and negative events that happened during the week of the study may have influenced one or both of these

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variables, and it would be important to control for it. It would therefore be important to challenge the causal relationship between selflessness and happiness\(^4\), for example, using and controlling for potentially important variables in future studies. Finally, in contrast to the approach used here, emotional stability and selflessness also can be conceptualized as personality traits (i.e., neuroticism for emotional stability; Hills & Argyle 2001). With this in mind, future research could examine the relationships between trait-selflessness, neuroticism, and the change in happiness over the short and long term.

5 Conclusions

Using an experience sampling study, we tested the hypothesis that selflessness is related to the baseline and stability of happiness at both the within- and between-person levels of analysis. Overall, more selfless individuals were happier, and more selfless moments for an individual were happier moments. Then, more selfless individuals were more stable from one day to the other, but this effect did not hold within a day. Importantly, regardless of the period considered (within or between days), when people became temporarily more selfless, their happiness was temporarily more stable. Not only this study confirms the importance of selflessness for the experience of high and stable happiness, but it demonstrates these effects in an ecological setting using the ESM methodology. Future research will have to investigate the mechanisms by which selflessness may strengthen happiness and reduce its fluctuations.

Authors’ Contributions  NP, MD and ER designed the study. NP collected, analysed the results and wrote the first draft of manuscript. MD and ER revised the manuscript. All authors approved the final version of the manuscript.

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Availability of Data and Material  The datasets analysed during the current study and the R scripts are available in the Open Science Framework repository, https://osf.io/7csk9/.

Code Availability  Not applicable.

Declarations

Competing Interests  The authors declare they have no financial interests.

Ethics Approval  All procedures performed in these studies were reviewed and approved by Toulouse University’s ethics committee (IRB00011835-2020-03-03-225). The study was conducted in accordance with the Declaration of Helsinki and its latest amendments.

Consent to Participate  Informed consent was obtained from all individual participants included in the study.

Consent for Publication  Not applicable.

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\(^4\) Preliminary analyses using continuous-time modeling (Driver et al., 2017) support the hypothesis that selflessness positively influences happiness. Moreover happiness appeared to influence selflessness negatively. More details are presented in Supplementary Material 2.
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