

POSSIBLE MECHANISM OF THE INFLUENCE OF GRATITUDE ON LIFE SATISFACTION

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Abstract

The aim of the study is to examine the mechanism through which the trait gratitude leads to life satisfaction. To this purpose, we studied the mediating role of positive and negative affect in the relationship between gratitude and life satisfaction. The participants in the study were 325 Romanian students ($M_{age}=20,84$; 234 males and 91 females) from public universities who completed three measures, namely for gratitude - Gratitude questionnaire-6 (GQ-6), for life satisfaction - Satisfaction with Life Scale (SWLS), and for positive and negative affect - Scale of Positive and Negative Experience (SPANE). The results show that the students who evince high gratitude tend to express higher positive affect and less negative affect. Structural equation modeling states that gratitude influences life satisfaction via positive and negative affect ($\chi^2/df=2,35$; $GFI=.89$; $CFI=.90$; $RMSEA=.066$). The data analysis shows that female subjects with higher gratitude and higher positive affect evince higher life satisfaction than male subjects. The results contribute to the understanding of the way in which gratitude influences life satisfaction.

Keywords: gratitude; life satisfaction; affect; structural equation model; mediation

Introduction

There is a consensus of various bodies of research with regard to the relation between gratitude and life satisfaction. Gratitude is defined as a feeling

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of admiration, content, and appreciation for life and for the benefits received from others (Emmons & Mishra, 2011), while life satisfaction means the cognitive component of subjective well-being and it refers to the overall assessment of life quality (Diener, Oishi, & Lucas, 2003). Research has shown that gratitude is related to happiness (Watkins, Woodward, Stone, & Kolts, 2003), subjective well-being (Emmons & McCulloch, 2003), positive affect (Emmons & McCulloch, 2003; Froh, Yurkewicz, & Kashdan, 2008; Sheldon & Lyubomirsky, 2006), well-being (Watkins et al., 2003) etc. For example, Hill and Allemand (2011) found that forgiving and grateful adults report on higher well-being in adulthood. Watkins et al. (2003) show that individuals who have higher scores for the trait gratitude have higher life satisfaction, higher well-being, and more positive emotions than the individuals with lower gratitude. Studies identified negative associations between gratitude and negative affect (McCulloch, Emmons, & Tsang, 2002; Thomas & Watkins, 2003), depressive symptoms (Lambert, Fincham, & Stillman, 2012; Wood, Froh, & Geraghty, 2010), generalized anxiety and phobia (Wood et al., 2010).

Research on the direct relation between gratitude and life satisfaction demonstrated that gratitude predicts life satisfaction in the case of students (Salvador-Ferrer, 2017), it is associated with school well-being (Jiang, Sun, Liu, & Pan, 2016), and it is a factor that influences life satisfaction even more than personality traits do (Robustelli & Whisman, 2018). Research that has focused on what exactly mediates the relation between gratitude and life satisfaction demonstrated the importance of coping styles, of positive affectivity, and of social support (Lin & Yeh, 2014), of Big Five personality traits (Emmons & McCulloch, 2003; Froh et al., 2009; Wood, Joseph, & Maltby, 2009), and of the perceived stress (Yildirim & Alanazi, 2018). Nevertheless, the mechanisms involved in the relation between gratitude and life satisfaction still raises many questions.

Gratitude is a positive emotion and it is strongly related to the habitual experience of positive emotions. By its very nature, gratitude entails positive feelings for what happens to the individual. Several studies focused on the relationship between gratitude, life satisfaction and the mediating role of affectivity. For example, Măirean, Turliuc and Arghire (2018) examine the relationship between the trait gratitude and psychological well-being in the case of a sample of 135 undergraduates and they reached the conclusion that the relation between the two variables is mediated by the affective state. Another

study which found that the relation between gratitude and life satisfaction is mediated by positive and negative affect belongs to Sun and Kong (2013). The authors state that the importance of positive affect in the relation between gratitude and life satisfaction is accounted for by the fact that positive emotions can be a benefit of gratitude. As a positive experience, gratitude can change the balance between positive affective experiences, reconverting negative experiences into positive ones and thus leading to greater life satisfaction. The mentioned authors studied 355 undergraduates and discovered that women with low negative affect are much more probable to feel greater life satisfaction than men, while men with deeper gratitude are more probable to have higher positive affect than women. This is because positive affect mediates the relation between gratitude and life satisfaction in the case of the male subjects, while only negative affect mediates the association between gratitude and life satisfaction in the case of female subjects (Sun & Kong, 2013).

The role of positive emotion in the association between gratitude and life satisfaction is corroborated by Lin's recent study (2019) who found that, in the case of students (N=375), the effect of gratitude on life satisfaction is partially mediated by positive emotion. The study suggests that gratitude can trigger other positive emotions, which, in their turn, increase and facilitate life satisfaction (Lin, 2019).

Objective

We based our research on prior literature and we proposed to explore the relationship between gratitude, affect, and life satisfaction. In this regard, we proceeded to testing the mediation effects of positive and negative affect on the association between gratitude and life satisfaction in the case of a group of students.

The following hypotheses were proposed:

1. Gratitude is positively linked to positive affect and life satisfaction and negatively linked to negative affect;
2. Life satisfaction is positively linked to positive affect and negatively linked to negative affect;
3. Positive affect and negative affect mediates the relation between gratitude and life satisfaction.

Method

Participants

The psychometric data put forth in this paper comes from processing the answers of a number of 325 undergraduates ($M_{age}=20,84$; $SD=1,38$) out of which 234 males, 91 females, without significant age differences from two large public universities, a technical one (73%) and one for economics (27%). The participants provided informed consent and they completed the measures voluntarily and anonymously. Regarding sampling method, it was a randomized sample.

Data collection instruments

The following validated instruments were applied:

Gratitude Questionnaire-6 - GQ-6 (McCullough et al., 2002) a self-report questionnaire with 6 item- assessed on a scale from 1 - *strongly disagree* to 7 - *strongly agree* developed with the purpose of appreciating the individual differences regarding the disposition to experiment gratitude. Sample item: *I have so much in life to be thankful for*. The scale passed the validity test in many Eastern and Western cultural environments (Caputo, 2016; Chen, Chen, Kee, & Tsai, 2008; Tian, Du, & Huebner, 2015). Many studies documented good alpha Cronbach coefficients on various populations, as the following studies show: 0.82 (McCullough et al., 2002), 0.80 (Chen et al., 2008; Loo, Tsai, Raylu, & Oei, 2014), 0.74 (Caputo, 2016). In the present research, the α Cronbach is 0,70 and the confirmatory factorial analysis (CFA) highlighted a good fit of the model obtained: $\chi^2/df=1,70$; $GFI=.99$; $CFI=.99$; $RMSEA=.055$; $SRMR=.027$.

Scale of Positive and Negative Experience – SPANE (Diener, Wirtz, Tov, Kim-Prieto, Choi, Oishi, et al., 2009) assess a broad range of pleasant and unpleasant feelings by asking people to report their feelings in terms of their duration after recalling their activities and experiences during the previous 4 weeks. The SPANE consists of 12 items: six items assess positive feelings (SPANE-P), and the other six assess negative feelings (SPANE-N) on a scale from 1 - *very rarely or never* to 5 - *very often or always*. Finally, affect balance is also calculated (SPANE-B): the negative feelings score is subtracted from the positive feelings score. The studies have reported optimal validity of the scale in the case of 21 322 full-time workers (Li, Bai, & Wang, 2013). We found, the

good Cronbach's alpha indices, also: 0,84 (SPANE-P) and 0,78 (SPANE-N). Through CFA we obtained the following indices: $\chi^2/df=2,80$; GFI=.93; CFI=.96; RMSEA=.070; SRMR=.051.

Satisfaction with Life Scale - SWLS (Diener, Emmons, Larsen, & Griffin, 1985) which takes into account cognitive assessment of life satisfaction. The SWLS is a short 5-item instrument designed to measure global cognitive judgments of satisfaction with one's life. Example of item: *I am satisfied with my life*. The SWLS is a 7-point Likert style response scale. The scale was validated on samples of Romanian subjects, general population, both through exploratory factor analysis (N=391; $M_{age}=31,01$) (Marian, 2007) and confirmatory factor analysis (N=285; $\chi^2=2,96$) (Marcu, 2013). The test-retest confidence coefficient ($r=.69$; N=124) (Marian, 2007) is identical to that obtained in equivalence testing of Romanian and English versions of the SWLS with the bilingual retest technique (Stevens, Constantinescu, Lambru, Butucescu, Sandu, & Uscătescu, 2012). The Cronbach's alpha coefficients reported were very good: 0,85 (Marian, 2007), 0,81 (Marcu, 2013), 0,86 - international sample with online completion (Stevens & Constantinescu, 2014). In the present research, we obtained $\alpha=0,78$ and for the CFA: $\chi^2/df=2,19$; CFI=.99; IFI=.99; RMSEA=.049; SRMR=.015.

Procedure and design

The measures were administered in groups during the teaching activities and took place at the beginning of the first semester of the academic year 2018-2019. Each administration was completed in about 6-7 minutes. The study subjects were not rewarded for participating in the study and were informed about the main purpose of the research. The current study has a cross-sectional design and data analyses were performed with SPSS 22 and Amos 20. First, we examined the descriptive and correlational analysis. Next, the structural equation modeling (SEM) was used to explore the relationship between gratitude, affect, and life satisfaction and the estimation of the model based on gender differences were used.

Results and discussion

a) Descriptive and correlational analysis

Before testing the mediation model we resorted to the correlational analysis. The mediation of the role of positive affect and that of negative affect

in the relation between gratitude and life satisfaction is possible if the variables are related. Table 1 shows the significantly moderate relation of gratitude with life satisfaction ($r=.47$; $p<.01$), positive affect ($r=.37$; $p<.01$), and negative affect ($r=-.24$; $p<.01$).

As expected, negative affect has reverse relations both with gratitude and life satisfaction ($r=-.38$; $p<.01$) and positive affect ($r=-.39$; $p<.01$). Thus, hypotheses 1 and 2 are confirmed. The correlational analysis shows that students with deep gratitude tend to express higher positive affect and less negative affect. At the same time, students with a high level of gratitude are more content with their life. The calculation of the significance of differences show that female subjects obtain higher scores for life satisfaction ($M_{\text{males}}=24,60$; $SD=5,59$; $M_{\text{females}}=26,02$; $SD=5,56$; $t=-2,03$; $p=.043$) and for gratitude ($M_{\text{males}}=26,76$; $SD=4,67$; $M_{\text{females}}=27,93$; $SD=4,07$; $t=-2,09$; $p=.037$); the result corroborates prior studies (Froh et al., 2009).

Table 1. Descriptive statistics and inter-correlations

	M	SD	α	1	2	3	4
1. Gender				–			
2. Gratitude	30,74	5,02	.70	.13*	–		
3. Positive affect	23,03	3,80	.84	.02	.37**	–	
4. Negative affect	15,58	4,28	.78	.10	-.24**	-.39**	–
5. Life satisfaction	25,01	5,61	.78	.11*	.47**	.56**	-.38**

Note: ** $p<.01$; * $p<.05$

b) Measurement Model

In order to measure the mediation model which included four latent factors (gratitude, positive affect, negative affect, life satisfaction), we used the following indicators: χ^2/df , GFI (goodness-of-fit index), CFI (comparative fit index), PNFI (Parsimony Normed Fit Index), PCFI (*Parsimony Comparative Fit Index*), RMSEA (root mean squared error of approximation). The assessment of multivariate normality distribution was performed using Mardia's Multivariate Normality Test. Because the critical ratio of the Mardia's coefficient of multivariate kurtosis was higher than 1.96 (Mardia coefficient=20,84, $p<.01$), the sample can be considered multivariate non-normal.

Given these circumstances, the bootstrapping technique is recommendable (Byrne, 2010). That is why we applied bootstrapping on 2000 samples. In the case of the gratitude scale, GQ-6, we took away item 6 which has very low loading (.20) and which, in general, is considered a problematic item (Langer, Ulloa, Aguilar-Parra, Araya-Véliz, & Brito, 2016). After we obtained a first structural equation model we examined the section of the modification of indexes which lead to the correlation of errors in the case of subscale Positive affect (SPANE-P) for items 1 (positive sensations) and 3 (good feelings), and in the case of life satisfaction scale (SWLS) for items 2 (The conditions of my life are excellent) and 5 (If I could live my life again, I would change almost nothing). In the next step, we re-run the CFA. The result showed an acceptable data fit (table 2): $\chi^2=857,324$, $df=364$, $CMIN/df=2,35$, $GFI=.89$, $CFI=.90$, $RMSEA=.047$ (CI 90%-.043-.051), $p<.001$. However, GFI and CFI are moderate in comparison with standard requirements ($GFI>.95$; $CFI>.95$; Byrne, 2010). From the perspective of the parsimonious fit measures, PNFI (.73) and PCFI (.78) are all higher than the ideal value of .50. All the factor loadings for the indicators of the latent variables were significant ($p<.001$), indicating that all the latent factors are well represented for all the respective indicators. All in all, the analysis of the measures of the model fit suggests that the model is acceptable.

Table 2. Summary of fit indices for path analysis (default model)

Model	χ^2	df	CMIN/df	GFI	CFI	PNFI	PCFI	RMSEA (CI 90%)
Default model	857,324	364	2,35	.89	.90	.73	.78	.047 (.043 - .051)

c) The analysis of the direct and indirect effects

In the next stage the direct and indirect effects were evaluated. All the direct effects were significant. The direct effects of gratitude, positive affect, negative affect, and life satisfaction were $\beta=.49$, $\beta=-.34$, and $\beta=.42$, $ps<.001$, respectively. The indirect effect of gratitude on life satisfaction was $\beta=.23$ [.157-.335], $p<.00$. The total effect of gratitude on positive affect, negative affect, and life satisfaction was $\beta=.48$, $\beta=-.34$, and $\beta=.65$, $ps<.001$, respectively. The important values of the model are shown in figure 1.

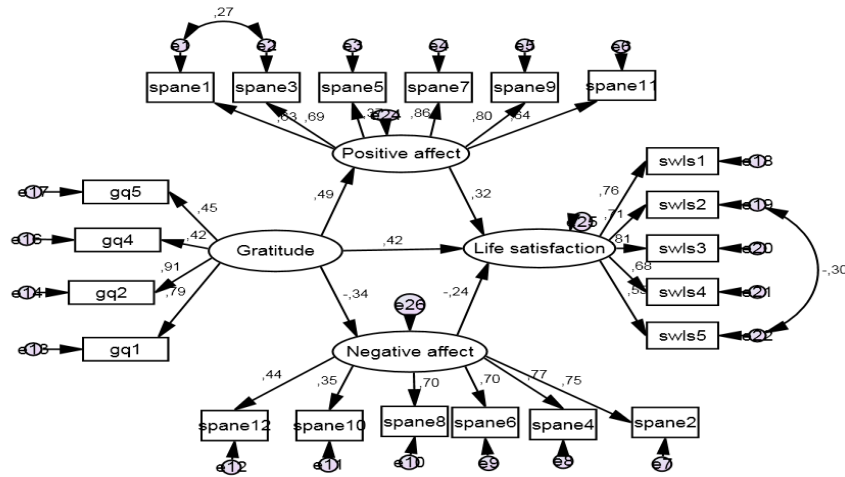


Figure 1. Structural equation model of the relationships between gratitude, positive affect, negative affect, and life satisfaction (Note: Factor loading are standardized)

d) Gender differences

The multi-group CFA analyses were used in order to find out if path coefficients differ significantly from females to males. The comparison of the models obtained demonstrated that the difference of χ^2 between models is insignificant, which indicates that the models do not differ depending on the gender criterion: $\Delta\chi^2=34,39, p<.05$. In addition, ΔCFI and ΔTLI are smaller than .01. Thus, we had a second criterion for the decision of model invariance. However, the analysis of the *critical ratio for differences* shows two major differences in the structural path for the male group and for the female group. The first is the difference between positive affect and life satisfaction and it is

translated into the fact that women with higher positive affectivity have higher life satisfaction.

The path coefficient for the group of females ($\beta=.78$; $p<.001$) is higher than the path coefficient for the group of males ($\beta=.56$; $p<.001$) ($CRD=2,80$; $p<.05$). The second is the difference between gratitude and life satisfaction. Thus, women with higher scores for gratitude have higher life satisfaction ($\beta=.55$; $p<.001$) than men ($\beta=.35$; $p<.001$) ($CRD=2,00$; $p<.05$).

Conclusions

The present study examined the importance of positive affect and negative affect in the relation between gratitude and life satisfaction in the case of a group of students. The results corroborate prior studies which report on the relationship between gratitude and life satisfaction (Wood et al., 2009; Froh et al., 2008) and the mediation of positive affect and negative affect between the two variables (Sun & Kong, 2013; Lin, 2019). The students with a high level of gratitude tend to experiment positive affect to a greater extent and to evince less negative affect. In their turn, positive and negative affect influence life satisfaction.

On the other hand, structural equation modeling analysis led to the conclusion that gratitude has direct effects on positive and negative affect. In addition, gratitude has indirect effects on life satisfaction via positive affect together with negative affect. As for gender differences, results show that females are much more grateful than males, and females with higher scores for gratitude and positive affect have higher scores for life satisfaction. It is well known that women experiment emotions more intensely and more frequently than men and that they report more complex emotional experiences than men (Ciarrochi, Hynes, & Crittenden, 2005; Kashdan, Mishra, Breen, & Froh, 2009).

The participants in the study were students that could be considered emerging adults. Similar results are obtained by structural equation modeling in the case of late adolescence (Sun & Kong, 2013) and of a psychotherapy outpatient (Toussaint & Friedman, 2009) where it is shown that the affective balance (positive affect - negative affect) mediates the association between gratitude and life satisfaction. Is it possible to change the mechanism through which gratitude influences life satisfaction if the sample is made of individuals

in a different age bracket? The comparative analysis of the mentioned studies shows that the relationship between gratitude, negative and positive affect, and life satisfaction could be the same irrespective of age. But further research is required for a definite answer. We also need to mention the limits of the study. One of them is the use of self-report scales which, by their very nature, are subjective and susceptible to tendentiousness (Sun & Kong, 2013). The second refers to the design of research which is a cross-sectional one, and the results must be considered carefully. We also note that the subjects that made up the sample only come from two faculties in the same city. With a longitudinal study, the impact of gratitude and affect on life satisfaction can be more effectively. Further studies should be conducted with different groups from diverse geographical areas. An implication of the study concerns the importance of gratitude exercises within the school hours, both in active relaxation breaks and directly related to the subject matter, especially as it belongs to the social-humanist field. At the same time, teachers need to know that the role of girls/undergraduate females can be utilised and enhanced in activating interactions within student groups.

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