

# Is Curiosity Good for Students' Well-Being? The Case of the Faculty of Teacher Education and the Faculty of Kinesiology

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## **Abstract**

*The aim of the study was to assess the relationship between curiosity and well-being in the sample of university students. A total of 318 college students from the Faculty of Teacher Education and the Faculty of Kinesiology (100 males and 215 females) participated in the study. The students ranged in age from 18 to 26. Four questionnaires were administered: Curiosity and Exploration Inventory - CEI-II (Kashdan et al., 2009), Positive and Negative Affect Schedule - PANAS (Watson, Clark, & Tellegen, 1988), Flourishing Scale - FS (Diener et al., 2009) and Basic Needs Satisfaction Scale (Gagné, 2003).*

*Results of ANOVAs showed that students of the Faculty of Kinesiology had higher scores on both curiosity scales: Curiosity Stretching and Curiosity Embracing. Curiosity stretching reflects the motivation to seek out knowledge and new experiences while embracing dimension is related to willingness to embrace the novel, uncertain, and unpredictable nature of everyday life. They also scored higher on positive affect and lower on negative affect. There was no statistical difference between students from the two faculties on the flourishing scale and the scale used to measure satisfaction of basic psychological needs. Gender differences were found only for negative affects, with females scoring higher on the negative affect scale.*

*Both curiosity scales were correlated to well-being scales, but as the results of hierarchical regression analyses revealed, only curiosity stretching was a significant predictor of basic needs satisfaction, positive affect and flourishing. Among students of the Faculty of Kinesiology, motivation to seek out knowledge and new experiences has a greater role in their well-being. This suggests the possibility of positive influence of*

*curiosity on well-being and the need to pay more attention to methods for developing curiosity in teaching and learning at the university level.*

**Key words:** *basic psychological needs; curiosity; flourishing; positive/negative affect; students; well-being.*

## Introduction

*Most people stop looking when they find the proverbial needle in the haystack.  
I would continue looking to see if there were other needles.*

Albert Einstein

### **Curiosity and Its Correlates**

Berlyne (1960) described curiosity as a state of emotional arousal caused by conceptual conflict or insecurity, which then stimulates the search for information or research to resolve this uncertainty. The consequence is the restructuring of knowledge or learning. Frijda (1994) discusses curiosity as emotion, some other authors (e.g., Clore, Ortony, & Foss, 1987) treat it as a cognitive state, and Depue (1996) described it as a core motivational mechanism of the biologically-based system of reward sensitivity. Ryan and Deci (2000) discuss it within a scope of intrinsic motivation, which in turn is central to well-being.

It seems that curiosity is an underlying motive in maintaining perseverance and creativity. Writers, artists, inventors, scientists and all others involved in the creative process are often invoked by curiosity to describe the psychological need which leads them to work. The very desire for success and creativity are not sufficient motivation to be persistent in work for ten or twelve or even sixteen hours a day regardless of the imbalance with other life roles (Kashdan & Fincham, 2002). Csikszentmihalyi (1988) explains that the reason for this is that creativity has a broader social dimension, i.e., always someone *else* decides whether the manuscript will be printed or paintings will be displayed. On the other hand, curiosity has self-regulatory mechanism that encourages intrinsic goal orientation, persistence, personal development, and creativity - with proper circumstances (Kashdan & Fincham, 2002). It is obvious that there is a positive feedback loop between these various intra-individual constructs. For example, if someone adopts more knowledge and is more proficient in the area, it is more likely that (at least to some extent), when engaged in these activities, (s)he receives more positive reinforcement and will persist in the activity longer. Then, people who have an intrinsic interest in the issue, are likely to be more satisfied while engaged in it and it is more likely that this will have a significant impact on their present and future well-being and the image they have of themselves (Ryan & Deci, 2000).

Curiosity, that is, its emotional - motivational component is associated with the active gathering of information necessary to, in the broadest sense, fill in knowledge gaps. Curiosity energizes personal resources in intrinsically satisfying activities -

regardless of their other outcomes. It involves learning rules (e.g., through additional training or prolonged exercise), converting boring activities into entertaining ones and risk-taking (Kashdan, 2002). Curiosity is a prerequisite for the investigation of the environment, as well as the investigation of ourselves and our ideas and emotions - which leads to the acquisition and integration of new perspectives and experiences (Kashdan, Rose, & Fincham, 2001). By intentionally seeking novel and challenging events, people with greater curiosity stretch or expand their knowledge, skills, and goal-directed efforts (e.g., Ainley et al., 2002).

Many (e.g., Ben-Zur, 2002; Boyle, 1983) consider that curiosity is not just a temporary condition but also a more permanent personality trait that is expressed in a wide variety of situations. Curiosity is related to information seeking or exploration of the environment, anxiety to avoidance of threatening situations due to fear, and anger to aggressive action (Ben-Zur, 2002). Kashdan and Steger (2007) proved curiosity as a mechanism for achieving and maintaining high levels of well-being and meaning in life. They found that on days when they are more curious, people high in trait curiosity reported more frequent growth-oriented behaviors and life satisfaction. Jovanović and Brdarić (2012) found out that adolescents high in trait curiosity have higher levels of life satisfaction and positive affect, and a greater sense of purpose in life and hope than adolescents with both low and average curiosity.

### ***Well – Being***

Ryan and Deci (2001) integrated and organized the field of well-being into two broad traditions: one dealing with happiness (hedonic well-being), and the other dealing with human potential (eudaimonic well-being). The hedonic approach views well-being as the presence of positive mood and life satisfaction - feeling good more often than feeling bad. The second approach is eudaimonic well-being which is tied to personal growth and the cultivation of one's full potential (Fava & Riuni, 2003).

According to Self-Determination Theory (SDT; Deci & Ryan, 2000; Vansteenkiste, Ryan, & Deci, 2008), there are three innate psychological needs, which have to be satisfied for individuals to gain well-being and to flourish: the need for autonomy (i.e., experiencing a sense of volition and psychological freedom), competence (the feeling that one is effective and able in one's behavior, rather than ineffective and inapt (White, 1959)), and relatedness (the feeling that one is connected to or in harmony with important others, rather than alienated or marginalized (Baumeister & Leary, 1995)). Much research in the SDT tradition has supported the idea that personal well-being is a direct function of the satisfaction of these basic psychological needs (Deci & Ryan, 1991; 2000; Reis et al., 2000; Ryan, 1995; Ryan & Deci, 2002; Sheldon, 2002).

Factors within the person or situation that facilitate autonomy, competence, and relatedness are expected to enhance well-being, whereas factors that detract from the fulfillment of these needs should undermine well-being. According to Sheldon and Elliot (1999), accumulation of these satisfying experiences over time leads to an increase in longitudinal well-being and, as posted by Seligman (2011), in flourishing.

As stated before, curiosity could serve as a mechanism for achieving and maintaining high levels of well-being. But how does curiosity fit among the concepts of well-being and basic psychological needs? And is it, at this point, reasonable to expect differences among students from very different faculties?

The aim of this study was to assess the relationship between curiosity, satisfaction of basic psychological needs and well-being of students at two different faculties.

We assumed that the components of curiosity would be positive predictors of satisfaction of basic psychological needs. We also assumed that the curiosity and basic psychological needs would be positive predictors of flourishing and positive affect (PA), and negative predictors of negative affect (NA).

## Method

### *Participants and Procedure*

The participants were 318 college students (100 males and 215 females; 3 participants did not report gender) from the Faculty of Kinesiology (KIF; N=148) and the Faculty of Teacher Education (UFZG; N=170), University of Zagreb. Participants in the sample ranged in age from 18 to 26 (M=20.49, SD=1.51; 16 participants did not report age).

Questionnaires were administered in group settings during regular lectures. Approximately 15 minutes were needed to fill out the questionnaires. Prior to the questioning the respondents were introduced to their rights to voluntary participation and were guaranteed anonymity.

### *Instruments*

Four questionnaires were administered:

**Curiosity and Exploration Inventory (CEI-II;** Kashdan et al., 2009) is a self-report instrument assessing individual differences in the recognition, pursuit, and integration of novel and challenging experiences and information. The scale comprising two dimensions: *stretching* (CEI-S) - being motivated to seek knowledge and new experiences (5 items; e.g., *I actively seek as much information as I can in new situations; I view challenging situations as an opportunity to grow and learn*), and *embracing* (CEI-E) - a general willingness to embrace the novel, uncertain, and unpredictable nature of everyday life (5 items; e.g., *I am the type of person who really enjoys the uncertainty of everyday life; I prefer jobs that are excitingly unpredictable*). Respondents were asked to rate how accurately each item reflects the way they generally feel and behave, on a five-point Likert scale, from 1 – *not at all* through 5 – *extremely*. In this study, Cronbach's alpha coefficients of reliability were .79 for stretching subscale, and .69 for embracing subscale.

**Positive Affect and Negative Affect Schedule (PANAS;** Watson, Clark, & Tellegen, 1988) provides self-assessment of both positive (PA) and negative (NA) general activated affective states. There are 10 adjectives for the PA dimension (e.g., *enthusiastic*) and 10 adjectives for the NA dimension (e.g., *nervous*). Respondents

were asked to rate the extent to which they have experienced each particular emotion within three months, on a five-point Likert scale, from 1 - *not at all* through 5 - *very much*. Cronbach's alpha in this study was .86 and .84 for the Positive Affect Scale and for the Negative Affect Scale respectively.

**Flourishing Scale (FS;** Diener et al., 2009) is an 8-item measure of perceived success in important areas such as relationships, self-esteem, purpose, and optimism (e.g., *I actively contribute to the happiness and well-being of others*). The scale provides a single psychological well-being score. A high average score represents a person with many psychological resources and strengths. Individuals respond to each item on a five-point Likert scale, from 1 - *strongly disagree* through 5 - *strongly agree*. In this study, Cronbach's alpha coefficient of reliability was .83.

**Basic Needs Satisfaction in General Scale (BNSG;** Gagné, 2003) is a self-report instrument that was created to assess the satisfaction of basic psychological needs in general. The original scale has 21 items concerning the three needs: competence (e.g., *I have been able to learn interesting new skills recently*), autonomy (e.g., *I feel like I am free to decide for myself how to live my life*), and relatedness (e.g., *I consider the people I regularly interact with to be my friends*). The three correlated subscales were averaged to form a single index of general needs satisfaction. Individuals respond to each item on a five-point Likert scale, from 1 - *strongly disagree* through 5 - *strongly agree*. In this study, Cronbach's alpha coefficient of reliability was .85.

## Results

Descriptive statistics and intercorrelations of all measured variables are presented in Table 1. Generally, students in this study reported moderately high levels of experienced flourishing and satisfaction of basic psychological needs, and moderate curiosity stretching, curiosity embracing and presence of positive affects. Presence of NA was rated as moderately low. Positive correlations were found between both measures of curiosity and all well-being measures used in this study. Contrary to that, negative correlations were found between both measures of curiosity and NA as a measure of ill-being. Both curiosity scales had the highest positive correlations with positive affect.

Table 1

*Intercorrelations and descriptive statistics for the curiosity scales, satisfaction of basic psychological needs and well-being*

	1. CEI_S	2. CEI_E	3. BNSG	4. PA	5. NA	6. FS
1. Curiosity Stretching	-					
2. Curiosity Embracing	.652**	-				
3. Basic Needs Satisfact.	.316**	.284**	-			
4. Positive Affect	.614**	.453**	.480**	-		
5. Negative Affect	-.233**	-.190**	-.430**	-.438**	-	
6. Flourishing	.430**	.327**	.669**	.552**	-.385**	-
M	3.53	3.45	3.91	3.63	1.96	4.09
SD	0.64	0.66	0.43	0.56	0.56	0.52

Analyses of variance (ANOVA) were conducted to determine psychological well-being, ill-being, basic needs satisfaction and curiosity differences between male and female students and according to their faculty. Due to small sample size of male students (N=6) from the Faculty of Teacher Education (UFZG), it was not possible to test interaction effects. In the first set of ANOVAs, curiosity measures (stretching and embracing), basic needs satisfaction, well-being measures (flourishing and positive affect) and ill-being measure (NA) were included as dependent variables, gender as an independent variable and faculty as a controlled covariate (Table 2). In the second set of ANOVAs, the same dependent variables as previously were included, but the independent variable was faculty, and gender was included as a controlled covariate (Table 3).

Table 2  
Gender differences in curiosity and subjective well-being

		M	SD	F <sub>(1,312)</sub>	Sig.	part. eta <sup>2</sup>
Curiosity Stretching	F	3.48	0.65	2.532	.113	.008
	M	3.62	0.62			
Curiosity Embracing	F	3.40	0.69	0.298	.585	.001
	M	3.53	0.58			
Basic Needs Satisfaction	F	3.94	0.44	0.062	.804	.000
	M	3.86	0.41			
Positive Affect	F	3.54	0.54	1.224	.269	.044
	M	3.84	0.56			
Negative Affect	F	2.06	0.56	5.790	.017	.018
	M	1.74	0.51			
Flourishing	F	4.09	0.52	0.591	.443	.002
	M	4.07	0.52			

Note: controlled covariate - faculty

Table 3  
Differences in curiosity and subjective well-being between the two faculties

		M	SD	F <sub>(1,312)</sub>	Sig.	part. eta <sup>2</sup>
Curiosity Stretching	UFZG	3.38	0.65	21.042	.000	.063
	KIF	3.71	0.59			
Curiosity Embracing	UFZG	3.34	0.68	6.873	.009	.022
	KIF	3.57	0.62			
Basic Needs Satisfaction	UFZG	3.96	0.43	1.996	.159	.159
	KIF	3.86	0.43			
Positive Affect	UFZG	3.47	0.51	14.474	.000	.044
	KIF	3.83	0.56			
Negative Affect	UFZG	2.09	0.57	4.092	.044	.013
	KIF	1.80	0.51			
Flourishing	UFZG	4.07	0.51	0.561	.454	.454
	KIF	4.10	0.53			

Note: controlled covariate – gender

The results showed that gender difference was found only for NA, with females scoring higher on the NA scale (Table 2). According to Cohen's criterion (1988), gender had a small effect size on NA ( $\eta^2=.018$ ). There was no statistical difference between male and female students on the flourishing scale, satisfaction of basic psychological needs scale, positive affect, and both curiosity measures.

The Faculty of Kinesiology students had higher scores on both curiosity scales - curiosity stretching and curiosity embracing than the Faculty of Teacher Education students. They also scored higher on positive affect and lower on NA. The effect size of faculty was moderate for curiosity stretching (part.  $\eta^2=0.063$ ), that is 6% of the variability in the curiosity stretching could be explained with the faculty. The effect size of faculty was small for curiosity embracing (part.  $\eta^2=.022$ ), positive affect (part.  $\eta^2=0.044$ ), and NA (part.  $\eta^2=0.013$ ). There was no statistical difference between students from the two faculties on the flourishing scale and satisfaction of basic psychological needs.

In order to examine the percentage of basic needs satisfaction variance accounted for by curiosity, hierarchical multiple regression analysis was conducted (Table 4). Sociodemographic variables (gender and faculty) were entered into regression equation first to control their influence on basic needs satisfaction. The curiosity variables (stretching and embracing) were entered at Step 2. The results showed that sociodemographic variables and curiosity together accounted for 16% of the variance of basic needs satisfaction. In the first step, gender and faculty did not contribute significantly, but the inclusion of curiosity measures into the analysis increased prediction by additional 14% of the variance on basic needs satisfaction. In the final step, curiosity stretching and faculty were significant predictors of basic needs satisfaction, while curiosity stretching had the highest predictive power. Students of the Faculty of Teacher Education and those students with higher motivation to seek out knowledge and new experiences also reported more satisfaction of their basic psychological needs.

Table 4  
Summary of hierarchical regression analysis for demographic characteristics and curiosity predicting aspects of basic needs satisfaction

	1st Step	2nd Step
	$\beta$	$\beta$
faculty	-.105	-.226**
gender	-.021	.019
Curiosity Stretching		.290***
Curiosity Embracing		.134
R <sup>2</sup> Change	.014	.143***
	R=.120; R <sup>2</sup> =.014; $\Delta R^2=.008$ ; F <sub>(2/311)</sub> =2.269; p=.105	R=.397; R <sup>2</sup> =.157; $\Delta R^2=.146$ ; F <sub>(4/309)</sub> =14.418; p=.000

\*p<.05; \*\*p<.01; \*\*\*p<.001

Note: gender (Female = 1; Male = 2); faculty (UFZG = 1; KIF = 2)

Several hierarchical multiple regression analyses were conducted to analyze relationships between measures of well-/ill-being and demographic characteristics, curiosity and basic needs satisfaction (Tables 5 and 6). In each analysis, in the first step sociodemographic variables were entered as independent variables/predictors, in the second step curiosity measures, and in the third basic needs satisfaction was entered. Since significant differences between faculties were found and preliminary analysis resulted with significant interaction effects of faculty and predictor(s), separate analyses were performed for each criterion. In the first analysis, criterion variable was positive affect, in the second negative affect, and in the third flourishing.

As shown in Tables 5 and 6, demographic variables, curiosity and basic needs satisfaction together accounted for 46% of the variance of UFZG students' and 52% of KIF students' PA, 23% of UFZG students' and 31% of KIF students' NA, and 48% of UFZG students' and 55% of KIF students' flourishing.

Table 5

Summary of hierarchical regression analyses for demographic characteristics, curiosity and basic needs satisfaction predicting aspects of well-being (PA and NA)

Step	Positive affect				Negative affect			
	UFZG		KIF		UFZG		KIF	
	R <sup>2</sup> Change	β	R <sup>2</sup> Change	β	R <sup>2</sup> Change	β	R <sup>2</sup> Change	β
1 – Demogr.	.001		.007		.039*		.017	
gender		.025		.085		-.199*		-.129
2 –Curiosity	.313***		.419***		.016		.089**	
gender		.033		.175**		-.200**		-.169*
C. Stretch.		.431***		.649***		-.093		-.244*
C. Embrac.		.174*		.008		-.044		-.082
3 - BNSG	.149***		.094***		.172***		.200***	
gender		.014		.169**		-.180*		-.161*
C. Stretch.		.343***		.520***		.002		-.056
C. Embrac.		.124		-.043		.010		-.008
Basic psy. needs		.406***		.347***		-.437***		-.508***
	R=.680; R <sup>2</sup> =.463; ΔR <sup>2</sup> =.449; F <sub>(4/164)</sub> =35.286, p=.000		R=.721; R <sup>2</sup> =.520; ΔR <sup>2</sup> =.506; F <sub>(4/140)</sub> =37.912, p=.000		R=.477; R <sup>2</sup> =.227; ΔR <sup>2</sup> =.208; F <sub>(4/164)</sub> =12.049, p=.000		R=.554; R <sup>2</sup> =.306; ΔR <sup>2</sup> =.287; F <sub>(4/140)</sub> =15.467, p=.000	

\*p<.05; \*\*p<.01; \*\*\*p<.001

Note: faculty (UFZG = Faculty of Teacher Education; KIF = Faculty of Kinesiology), gender (Female = 1; Male = 2)

In the first separate analysis (Table 5), after controlling for sociodemographic variables (step 1), inclusion of curiosity (step 2) increased prediction by additional 31% of the variance on UFZG students' PA and 42% of the variance on KIF students' PA. In the third step, inclusion of basic needs satisfaction increased prediction by additional 15% of the variance on UFZG students' PA and 9% of the variance on KIF students' PA. In the final model, significant predictors of UFZG students' PA were curiosity stretching and basic needs satisfaction. It has to be noted that in step 2 curiosity embracing was also a significant predictor but then in the final step it lost its significance suggesting mediating role of basic needs satisfaction on the relationship between PA and curiosity embracing. In the final model, basic needs satisfaction had the highest predictive power of PA. UFZG students with higher motivation to seek out knowledge and new experiences and whose basic needs were more satisfied also reported more PAs in their lives. In the final model, significant predictors of KIF students' PA were gender, curiosity stretching and basic needs satisfaction. Curiosity stretching had the highest predictive power of PA. KIF students, males, and those students with higher motivation to seek out knowledge and new experiences and whose basic needs were more satisfied also reported more PAs in their lives. Since preliminary analysis showed that when interactions of faculty and predictors were entered into the equation prediction was increased by 2% ( $R^2\text{Ch.} = .022$ ;  $F_{(3,306)} = 4.896$ ,  $p = .002$ ) with significant interaction between faculty and curiosity stretching on PA, it can be concluded that motivation to seek out knowledge and new experiences has greater impact on KIF students' PA than the PA of UFZG students.

In the second separate analysis (Table 5), after controlling for sociodemographic variables (step 1), inclusion of curiosity (step 2) increased prediction by additional 9% of the variance on KIF students' NA. This step was not significant for UFZG students. In the third step, inclusion of basic needs satisfaction increased prediction by additional 17% of the variance on UFZG students' NA and 20% of the variance on KIF students' PA. In the final model, significant predictors of UFZG students' NA were gender and basic needs satisfaction. Basic needs satisfaction had the highest predictive power of NA. UFZG female students and those UFZG students whose basic needs were less satisfied also reported more NAs in their lives. In the final model for KIF students, significant predictors of NA were also gender and basic needs satisfaction. Curiosity stretching was a significant predictor in step 2 but then in the final step it lost its significance suggesting mediating role of basic needs satisfaction on the relationship between NA and curiosity stretching. Basic needs satisfaction had the highest predictive power of NA. KIF female students and those KIF students whose basic needs were less satisfied also reported more NAs in their lives. Preliminary analysis showed that the interactions of faculty and predictors increased prediction by 2% ( $R^2\text{Ch.} = .020$ ;  $F_{(3,306)} = 2.913$ ,  $p = .035$ ) and significant interaction was found between faculty and basic needs satisfaction on NA, suggesting that basic needs satisfaction has greater impact on NA of KIF students than on UFZG students' NA.

Table 6  
 Summary of hierarchical regression analyses for demographic characteristics, curiosity and basic needs satisfaction predicting aspects of well-being (flourishing)

Step	Flourishing			
	UFZG		KIF	
	R <sup>2</sup> Change	β	R <sup>2</sup> Change	β
1 – Demogr.	.001		.003	
gender		-.028		-.056
2 –Curiosity	.129***		.287***	
gender		-.023		.017
C. Stretch.		.277**		.510***
C. Embrac.		.112		.048
3 - BNSG	.345***		.261***	
gender		-.051		.006
C. Stretch.		.142		.296***
C. Embrac.		.035		-.039
Basic psy. needs		.619***		.581***
	R=.689; R <sup>2</sup> =.475; ΔR <sup>2</sup> =.462; F <sub>(4/164)</sub> =37.114, p=.000		R=.743; R <sup>2</sup> =.552; ΔR <sup>2</sup> =.539; F <sub>(4/140)</sub> =43.363, p=.000	

\*p<.05; \*\*p<.01; \*\*\*p<.001; Note: faculty (UFZG = Faculty of Teacher Education; KIF = Faculty of Kinesiology), gender (Female = 1; Male = 2)

In the third separate analysis (Table 6), after controlling for sociodemographic variables (step 1), inclusion of curiosity (step 2) increased prediction by additional 13% of the variance on UFZG students' flourishing and 29% of the variance on KIF students' flourishing. In the third step, inclusion of basic needs satisfaction increased prediction by additional 35% of the variance on UFZG students' flourishing and 26% of the variance on KIF students' flourishing.

In the final model for UFZG students, a significant predictor of flourishing was only basic needs satisfaction. It has to be noted that in step 2 curiosity stretching was also a significant predictor but then in the final step it lost its significance suggesting mediating role of basic needs satisfaction on the relationship between flourishing and curiosity stretching. UFZG students whose basic needs were more satisfied also reported greater flourishing in daily life. In the final model for KIF students, significant predictors of flourishing were curiosity stretching and basic needs satisfaction. Basic needs satisfaction had the highest predictive power of flourishing. Those KIF students with higher motivation to seek out knowledge and new experiences and whose basic needs were more satisfied reported greater flourishing in daily life. Preliminary analysis showed that when interactions of faculty and predictors were entered into the equation, prediction was increased by 1% (R<sup>2</sup>Ch.= .010; F<sub>(3,306)</sub>=5.992, p=.015)

and significant interaction was found between faculty and basic needs satisfaction on flourishing suggesting that basic needs satisfaction has greater impact on UFZG students' flourishing than on that of KIF students.

To summarize, the results showed that curiosity stretching had significant role in explaining students' basic need satisfaction and well-being but not ill-being. Significant differences were found in the aforementioned relationship between the students from the Faculty of Teacher Education and those from the Faculty of Kinesiology. Curiosity stretching had greater impact in explaining students' well-being directly and/or indirectly through basic needs satisfaction among KIF students than among UFZG students.

## **Discussion**

### ***Relationship between Curiosity, Basic Psychological Needs and Well-Being***

As expected, positive correlations were found between both measures of curiosity (Curiosity Stretching and Curiosity Embracing), basic needs satisfaction, and well-being measures (PA, Flourishing); negative correlations were found between both measures of curiosity and NA as a measure of ill-being. Both curiosity scales had the highest positive correlations with PA. Hierarchical regression analysis revealed that curiosity stretching and type of faculty are together significant predictors of basic needs satisfaction: students of the Faculty of Teacher Education and those students with higher motivation to seek out knowledge and new experiences also reported more satisfaction of their basic psychological needs. Further hierarchical regression analyses, with all measured variables in regression equation (the final step) showed that gender is a significant predictor of affects: male students of kinesiology have higher level of PA and lower level of NA while male future teachers have only lower level of NA; satisfaction of basic psychological needs is a significant predictor of both affects and flourishing; those with satisfied needs have higher level of PA, lower level of NA and higher flourishing; curiosity stretching is a significant predictor of PA of both types of students and flourishing of kinesiology students (with no effect on NA); those students with higher motivation to seek out knowledge and new experiences have higher level of PA and higher flourishing. Among the students of the Faculty of Teacher Education curiosity embracing was a significant predictor of PA and curiosity stretching was a significant predictor of flourishing before entering basic needs satisfaction in regressions, but then in the final step they lost their significance suggesting mediating role of basic needs satisfaction on the relationship between PA and curiosity embracing, and flourishing and curiosity stretching. Among the students of the Faculty of Kinesiology, curiosity stretching was a significant negative predictor of NA (step 2) but after entering basic needs satisfaction (the final step) it lost its significance suggesting mediating role of basic

needs satisfaction on the relationship between NA and curiosity stretching. Curiosity as an intrinsic motive derives from basic psychological needs and satisfying them is essential to well-being. These correspond with some previous research: people scoring higher on trait curiosity scales report greater well-being (e.g., Cacioppo et al., 1996; Naylor, 1981; Park, Peterson, & Seligman, 2004; Vittersø, 2003; Wanberg & Kammeyer-Mueller, 2000). In a longitudinal study of 7th to 11th grade students the curious ones reported their school experience as more satisfying (PA) (Ainley, 1998). However, it is important to note that even though both curiosity measures significantly correlated with basic needs satisfaction, well-being and ill-being, only curiosity stretching (but not embracing) was a unique predictor of the basic needs satisfaction and well-being in the present study. Curiosity stretching and embracing are two conceptually different dimensions of curiosity. The stretching dimension is more growth-oriented and strongly related to various indicators of well-being, while the embracing dimension is more oriented toward readiness to embrace novel and unpredictable experiences (Kashdan et al., 2009) and more similar to sensation seeking measures (Jovanović, & Gavrilov-Jerković, 2014; Kashdan et al., 2004). Jovanović and Gavrilov-Jerković (2014) found that curiosity embracing (but not stretching) predicted risky behavior engagement, while curiosity stretching (but not embracing) predicted PA and neither embracing nor stretching was a significant predictor of NA which is consistent with the results in the present study.

### ***Differences between the Faculties***

How come that the students of the Faculty of Kinesiology had higher scores on both curiosity scales than the students of the Faculty of Teacher Education, and higher scores on PA and lower on NA? "Curiosity is a counterbalance to certainty, closure and confidence. On the surface, curiosity and the need to be certain are both about gathering information and reflecting on experience" (Kashdan, 2009, p. 23). If we dig deeper, we can find some important differences in how we relate to ourselves and the outer world. When we are curious, we explore; when we seek certainty, we are looking for finality (Kashdan, 2009). It could be that future teachers are looking to close the search process sooner rather than later so they can feel confident that they know what to do and how to work with children and educate them. Although the students of kinesiology are also prone to be teachers, they are not limited to this profession – as students of the Faculty of Teacher Education generally *are* in their profession. They are faced with greater professional diversities that may be explored.

On the other hand, there is some evidence that PA is an independent predictor of health outcomes (Steptoe, Dockray, & Wardle, 2009) and there is much more evidence that PA is correlated with health-protective biological responses (Lyubomirsky, King, & Diener, 2005). So, positive health behaviors (and continuous physical exercise, which the students of kinesiology are apt to, is definitely a part of positive health behaviors) could be a consequence or a cause of PA. In addition, Lyubomirsky, Sheldon, and

Schkade (2005) presented evidence that PA that stems from intentional activities, including cognitive and behaviorally based activities, is most likely to lead to sustained gains in PA. Also, activities that can be varied and intentional activities that are congruent with personal goals, abilities and interests may be especially likely to lead to long-term PA.

In a series of studies Schutte and Malouffa (2015) identified two core aspects of sustainable PA: engaging in self-congruent activities and engaging in new activities. A higher level of facility for sustainable affect was associated with the maintenance of positive mood for a month, less NA, more life satisfaction, personal expansion and growth (flourishing). It would be interesting to investigate how Croatian students choose the faculty at which they are studying. It seems that because of very strict physical exams during the entrance qualifications, the Faculty of Kinesiology is rarely the second or the third option, unlike the Faculty of Teacher Education which is sometimes a *consolation prize* (Čudina Obradović, 2008). In that case it would be reasonable to expect that kinesiology students are more satisfied and have higher PA than the pre-service teachers.

### **Gender Differences**

We did not find gender differences regarding curiosity. Spielberger et al. (1979) found that gender differences among American college students on curiosity were minimal and non-significant, while the results among Israeli college students (Ben-Zur & Zeidner, 1988) revealed modest gender-group differences in favor of males. In our research the only gender difference was found regarding NA: female participants reported more NA than the male (but equal PA as the male). This corresponds with some previous findings (Brebner, 2003; Fujita, Diener, & Sandvik, 1991).

### **So, Is Curiosity Good for Students? – Practical Implications**

In short, the answer is yes. Although, it is difficult to infer whether curiosity influences well-being or vice versa, i.e., it could be that their relationship is reciprocally causal: curiosity can positively influence well-being, but well-being can further increase students' curiosity. In any case, it would be useful to encourage curiosity in education. Our research revealed its positive impact on well-being (PA and flourishing) but there are some other possible consequences of curiosity, or at least its correlates.

Izard (2002) says that the cognitive component of curiosity can serve as a mediator between learning and those “strong” emotions such as anger and anxiety. Specifically, anxiety or anger will suppress curiosity, and thus negatively affect the behavior associated with learning (Ben-Zur, 2002). Meta-analysis (von Stumm, Hell, & Chamorro-Premuzic, 2011) concluded that effort and curiosity together have as much influence on student success as intelligence does.

Enhancing curiosity-related behavior might be an important application for the future education. Studies have shown that specific facets of environments

(e.g., perceived threat, autonomy supportive) and activities (e.g., competitiveness, meaningfulness) influence curiosity (Silvia, 2012). Kashdan and Yuen (2007) in their study revealed that the relationship between curiosity and academic success depends on whether school environment supports values about growth and learning. Their results showed that adolescents with greater trait curiosity in more challenging schools had the greatest academic success, while adolescents with greater trait curiosity in less challenging schools had the least academic success. Referring to the pedagogical literature, there are several examples of fostering inquiry learning (van Zee, Hammer, Bell, Roy, & Peter, 2005), raising curiosity and enthusiasm for the learning process (Alvarado & Herr, 2003), promoting students' exploration and appropriation of knowledge through curiosity and thinking (Hill & McGinnis, 2007), or using questions and answers to promote scientific inquiry and intelligence development (Sternberg, 1994).

### ***Limitations of the Study and Future Directions***

The nature of our study was correlational thus preventing conclusions being drawn regarding causality between variables. It is likely that curiosity will lead to higher well-being but it is possible also that satisfied and happy students will be more prone to experience curiosity. Longitudinal and experimental studies with induced curiosity as intervention are needed to establish the direction of causality.

It would be interesting to explore the relationship between well-being and differential curiosity profiles, such as curiosity in one versus many domains. Also, it would be good to expand the sample of surveyed students to other faculties

### **Conclusions**

The aim of the study was to assess the relationship between curiosity and well-being in the sample of university students. Positive correlations were found between both measures of curiosity and all well-being measures. Curiosity stretching was a significant predictor of basic needs satisfaction, PA and flourishing. It is likely that curiosity helps satisfying basic psychological needs which in turn increase well-being, but it is also possible that satisfied and happy students will be more prone to experience curiosity. It can be a general strength revealing a person's tendency to be curious but, as teachers, we have to create conditions for curiosity to flourish. The possible positive impact on well-being should not be ignored.

This study contributes further to the literature about curiosity by indicating a role of curiosity in the relationship between satisfaction of basic psychological needs and well-being.

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# Je li dobro biti radoznao? Slučaj studenata Učiteljskog i Kineziološkog fakulteta

## Sažetak

Cilj ovog istraživanja bio je ispitati odnos između radoznalosti i dobrobiti studenata. Sudjelovalo je 318 studenata Učiteljskog i Kineziološkog fakulteta (100 muškarca i 215 žena) u dobi između 18 i 26 godina. Primijenjena su četiri upitnika: Upitnik radoznalosti i istraživanja – CEI-II (Kashdan i sur., 2009, Skala pozitivnih i negativnih emocija – PANAS (Watson, Clark i Tellegen, 1988), Skala psihološkog napredovanja – FS (Diener i sur., 2009) i Skala zadovoljenja temeljnih psiholoških potreba (Gagné, 2003).

Rezultati su pokazali da su studenti Kineziološkog fakulteta imali bolje rezultate na obje skale radoznalosti: Proširivanje i Prihvatanje. Proširivanje radoznalosti odnosi se na motivaciju traženja novih znanja i iskustava, a Prihvatanje je povezano sa spremnošću na prihvatanje novih, neodređenih i nepredvidivih stvari u životu. Isti su studenti doživljavali više pozitivnih, a manje negativnih emocija. Na Skali psihološkog napredovanja i Skali zadovoljenja temeljnih psiholoških potreba nema značajne razlike. Rodne razlike pokazale su se samo na Skali negativnih emocija: studentice imaju više negativnih emocija.

Obje skale radoznalosti u korelaciji su sa skalama dobrobiti, no prema rezultatima hijerarhijskih regresijskih analiza jedino se Proširivanje radoznalosti pokazalo kao značajan prediktor za zadovoljenost temeljnih psiholoških potreba, pozitivne emocije i psihološkog napredovanja. Kod studenata Kineziološkog fakulteta motivacija za traženje novih znanja i iskustava ima veću ulogu u ostvarivanju dobrobiti.

Rezultati istraživanja sugeriraju mogućnost pozitivnog utjecaja radoznalosti na dobrobit, ali i potrebu za tim da se obrati više pažnje na metode poticanja radoznalosti u visokoškolskom poučavanju i učenju.

**Ključne riječi:** dobrobit; pozitivne/negativne emocije; radoznalost; temeljne psihološke potrebe; studenti.