THE UNIVERSALITY OF THE INTERNATIONAL AFFECTIVE PICTURE SYSTEM: RATINGS FROM A SAMPLE OF LITHUANIAN STUDENTS

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Abstract. International Affective Picture System (IAPS) is a database of photographs, which is used for studying human emotions, cognition, behavior and other areas. Although IAPS is considered suitable for using in different countries, there are some cross-cultural differences. ***Purpose.*** The aim of the present study was to determine the valence, arousal and dominance ratings of IAPS pictures in the sample of Lithuanian students and compare them with original United States (US) norms. ***Methods and Results.*** 103 Lithuania's psychology students rated valence, arousal and dominance of 59 images from IAPS system. The results showed a high correlation between ratings of Lithuanian and US samples of all three dimensions. However, there were significant differences in the mean ratings of emotional valence and arousal – Lithuanian participants' ratings were closer to neutral value. Moreover, some gender differences were found. Our study showed that men are more aroused by pleasant pictures compared to women, whereas an opposite tendency was observed with unpleasant pictures – women are more aroused by such images compared to men. ***Conclusions.*** The study findings suggested that IAPS can be reliably used as stimuli for studies of emotion in Lithuania.

Keywords: IAPS, affective pictures, emotion, gender, culture.

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INTRODUCTION

Even though there is a great variety of emotional experience, people react similarly to the same stimulus. However, cultural as well as gender norms may influence emotional responding and emotional regulation (Davis et al., 2013). International Affective Picture System (IAPS) was devised as a reliable standardized method for eliciting emotions in experimental setting (Lang, Bradley & Cuthbert, 2008). The main value of this instrument is that it not only facilitates the selection and control of visual stimuli in studies of emotion, but also allows more accurate comparison of the results from different experiments. IAPS database consists of 1196 high resolution color photographs of such objects as buildings, babies, animals, trees or mutilated corpses. This variety of content is similar to a stimulation, which occurs in real life setting, and covers the entire affective space.

The IAPS is based on dimensional view of emotions. The creators of the instrument emphasize two dimensions of emotional reactions: "pleasure" (valence) and "arousal" (Bradley & Lang, 2007). The former is represented by two separate motivational systems with their own neural pathways. Appetitive system is activated by a stimulus associated with survival and is responsible for the approach response. Aversive/defensive system starts in response to a threat stimulus and leads to the avoidance response. The system, which is currently active, determines the hedonic valence in the reaction to a specific stimulus: if attractive system is activated, positive affect appears, and if aversive system is more pronounced, negative affect is felt. The intensity of this activation is described by emotional arousal and is determined by significance of the stimulus (this depends on current needs and imminence of a specific stimulus). Greater significance leads to a more intense motivational mobilization. The link between valence and arousal is demonstrated by a "boomerang" shape distribution of scores when emotional ratings are plotted in the two-dimensional space, with arousal ratings shown on the X axis and valence – on Y. That is positive and negative stimuli are associated with greater arousal compared to neutral ones (Bradley, Codispoti, Cuthbert, & Lang, 2001). Similarly, highly positive or highly negative stimuli, which at the same time are low-arousing, are almost non-existent. The same is true in a real-life setting, e.g. there are no situations which would be perceived as very threatening, and at the same

time organism would not react to it. The reason is that aversive system cannot prevail over the appetitive one, without being activated at all.

A third, "dominance", dimension is also distinguished and has its ratings reported in IAPS norms. It characterizes the degree of the response controllability. However, dominance is criticized for making sense in situations of social interaction, but less in non-interactive context, such as in reaction to symbolic sensory stimuli – pictures (Bradley & Lang, 2007). Moreover, dominance ratings of pictures highly correlate with hedonic valence.

IAPS is now used for studying emotions, cognition and other areas (Aguilar de Arcos, Verdejo-García, Peralta-Ramírez, Sánchez-Barrera & Pérez-García, 2005; Heponiemi et al., 2007; Sharp van Goozen & Goodyer, 2006; Staude-Müller, Bliesener & Luthman, 2008). Most often IAPS is used together with the Self-Assessment Manikin (SAM) – a self-report measure, in which emotional reactions are studied with a help of figures, accompanying each of the three scales, representing three main dimensions. It highly correlates with Semantic Differential Scale based on subjective measures (Bradley & Lang, 1994). However, IAPS is also used in psychophysiological, behavioral and neuropsychological studies (Bradley & Lang, 2007). IAPS is the most widely used database of natural pictures of emotionally charged stimuli (Marchewka, Žurawski, Jednorog & Grabowska, 2014).

Although IAPS is considered to be usable internationally (Lang et al., 2008), there are cross-cultural differences, especially in arousal ratings. For example, Brazilian (Lasaitis, Ribeiro & Bueno, 2008; Ribeiro, Pompeia & Bueno, 2005), Spanish (Moltó et al., 1999; Vila et al., 2001), German (Grühn & Scheibe, 2008), Bosnian (Drače, Efendić, Kusturica & Landžo, 2013), Chilean (Dufey, Fernández & Mayol, 2011) samples' ratings were higher in arousal compared to North American, while ratings of the Indian sample (Lohani, Gupta & Srinivasan, 2013) were less arousing. On the other hand, IAPS norms based on Flemish sample were more similar to North American (Verschuere, Crombez & Koster, 2001). The same is true of Hungarian participants (Deak, Csenski & Révész, 2010). Nevertheless, similar "boomerang" style relationship between valence and arousal was found in all these studies.

Cross-cultural comparison is especially important, considering that one of the purposes of IAPS is to facilitate the comparison of different

studies (Lang et al., 2008). The main problem in comparing results of separate research lies in replicating experimental settings. This is especially evident when there is no information regarding the exact stimuli, which were used. Since IAPS is highly standardized database with clear norms, it allows avoiding or at least alleviating such problems. However, in order to effectively compare international research, the cultural impact must be taken into consideration.

The expression of emotion is largely universal but there are subtle differences across cultures that can create a challenge for effective communication. For example, a meta-analysis, conducted by Elfenbein, Mandal, Ambady, Harizuka and Kumar (2002), showed that measurable intracultural differences exist in basic emotion recognition. These cultural differences can be observed even at the neuropsychological level (Losin, Dapretto & Iacoboni, 2010). The topic of cultural affective neuroprocessing is very important, because it could provide clues to the mechanisms underlying cultural differences (Olofsson, Nordin, Sequeira & Polich, 2008). However, before starting in-depth research in cultural neuroscience, it is important to find common methods, which could be used in different studies. IAPS is one of them, because due to its standardization, it allows to compare studies from different cultures.

Moreover, affective picture ratings differ not only in cultures, but between genders as well. Women typically assign lower valence and higher arousal ratings to unpleasant pictures compared to men (Calvo & Avero, 2009; Dufey et al., 2011).

Lastly, the research in emotional health is also an important issue, because the alteration of any emotional aspect is a common characteristic in most mental disorders. Since IAPS is a very efficient instrument to induce and measure emotions in the laboratory, it is applied with increasing frequency in studies with clinical populations suffering different psychiatric disorders. In addition, it can be used to study the interaction between emotions and other cognitive aspects or relevant behaviors in order to understand different disorders. Moreover, it is frequently used as an independent variable in neuroimaging studies aimed at investigating biological basis of different disorders (Jayaro et. al., 2008). IAPS has been only recently applied in Lithuania (Mačiukaitė, Grikšienė & Rukšėnas, 2010) and one of the main hindrances in both research and clinical settings is the lack of information about Lithuanians' reaction to

IAPS stimuli in comparison to existing norms. As it was already discussed previously, results from different countries do not always correlate, especially in arousal dimension. That is why, the aim of this study was to determine the ratings of the IAPS pictures in the dimensions of valence, arousal and dominance in a sample of Lithuanian university students and compare them to the original US norms (Lang et al., 2008).

METHODS

Participants

103 psychology students (21 male and 82 female) aged between 18–24 years, were recruited for the research through class advertisements. For the homogeneity of the sample all participants were psychology students from Mykolas Romeris University. The study was conducted according to the ethical guidelines of the American Psychological Association's (APA's) Ethics Code. The participants reported normal or corrected-to-normal vision and good general health.

Materials

The research was performed using the IAPS (Lang et al., 2008), which consists of photographs with a broad range of semantic categories, divided into 20 sets of around 60 photos in each. In this study the 20th set from the IAPS was used with total of 59 images, because at the time of the study it was the latest and consisted of the highest resolution pictures.

According to the normative data for the US population (Lang et al., 2008), 20 of the pictures were unpleasant (valence ratings ranged from 1 to 3), 20 pictures – neutral (ratings from 4 to 6) and 19 pictures were unpleasant (ratings from 7 to 9). Pictures were presented randomly, but sequences of two and more pictures with the same valence were eliminated.

Evaluation

Emotions of participants were measured by using SAM (Self-Assessment Manikin) method. It is based on three groups of figures. Each of the group reflects one of the three emotional dimensions: valence (from happy to sad), arousal (from aroused to calm) and dominance (from

dominated to dominant). Participant has to choose three figures, which represent their current emotion (valence, arousal and dominance aspect)

Procedure

Each participant was given a consent letter, explaining the features of the experiment. The instructions were based on the standardized guidelines, proposed by Lang and colleagues (2008). The experiment began with three test photographs (4200, 7010, 3100), which helped participants to understand the standardized presentation format and instruction for the evaluation. Each picture was presented as follows: at first, slide with the text "Get ready to evaluate the next photo" appeared for 5 seconds, then the photograph was displayed for 6 seconds. After that, the instruction "Write your answer on sheet x, line x" appeared for 15 seconds.

Data analysis

SAM scales were recorded in the way that higher values indicated more positive valence, higher arousal, and greater feelings of self dominance. Paired Student's t-test, one-way between images analysis of variance (ANOVA) and Pearson correlation coefficient were used for analyzing differences between Lithuanian and US samples as well as relations between different dimensions. The alpha level for significance was set at $p<0.05$.

RESULTS

The present study used images, which were divided into three main image categories (pleasant, neutral and unpleasant) according to US sample. Their results showed that aforementioned three separate image categories were also observed in Lithuanian sample. One-way ANOVA of valence ratings in Lithuanian sample revealed significant differences between categories of images: $F(2,56)=127.32$, $MSE=0.7$, $p<.01$, $\eta_p^2=.82$. Bonferroni post hoc test showed that the valence ratings of positive images were the highest, while ratings of unpleasant images were the lowest ($p<.01$) (Table 1).

Table 1 Comparison between Lithuanian and US ratings of valence, arousal and dominance ratings for different image categories.

All

		LT		US				
		M	SD	M	SD	t	df	p
Valence	All	4.96	.61	4.90	1.79	.26	116	.80
	Pleasant	5.65	.24	6.82	.47	−9.70	36	**<.01**
	Neutral	4.97	.25	5.23	.58	−1.85	38	.07
	Unpleasant	4.31	.29	2.75	.75	8.63	38	**<.01**
Arousal	All	4.99	.52	5.24	.99	−1.72	116	.09
	Pleasant	5.14	.31	5.66	.72	−2.89	36	**<.01**
	Neutral	4.50	.36	4.39	.70	.59	38	.56
	Unpleasant	5.35	.45	5.7	.93	−1.51	38	.14
Dominance	All	5.06	1.17	5.04	1.09	.08	116	.93
	Pleasant	5.71	.57	5.77	.53	−.38	36	.70
	Neutral	5.69	.68	5.59	.5	.55	38	.58
	Unpleasant	3.81	.97	3.79	.79	.04	38	.96

Female

		LT		US				
Valence	All	4.97	.92	4.83	2.04	.48	116	.63
	Pleasant	6.01	.30	7.08	.60	−6.91	36	**<.01**
	Neutral	4.99	.40	5.10	.69	−.63	38	.53
	Unpleasant	3.95	.42	2.41	.73	8.21	38	**<.01**
Arousal	All	4.84	.73	5.24	1.04	−2.42	116	**.02**
	Pleasant	5.02	.44	5.75	.71	−3.84	36	**<.01**
	Neutral	4.18	.49	4.25	.69	−.38	38	.71
	Unpleasant	5.33	.69	5.74	.89	−1.65	38	.11
Dominance	All	5.03	1.26	4.93	1.26	.45	116	.66
	Pleasant	5.69	.61	5.82	.58	−.68	36	.50
	Neutral	5.73	.78	5.53	.63	.85	38	.40
	Unpleasant	3.71	1.05	3.47	.83	.80	38	.43

Male

		LT		US				
Valence	All	4.93	.76	5.04	1.45	−.49	116	.62
	Pleasant	4.23	.39	6.34	.63	−12.47	36	**<.01**
	Neutral	4.87	.55	5.47	.73	−2.90	38	**<.01**
	Unpleasant	5.66	.5	3.37	.84	1.49	38	**<.01**
Arousal	All	5.60	.55	5.25	1.07	2.20	116	**.03**
	Pleasant	5.62	.38	5.50	.95	.49	36	.63
	Neutral	5.73	.49	4.65	1.00	4.33	38	**<.01**
	Unpleasant	5.43	.70	5.61	1.03	−.63	38	.54
Dominance	All	5.16	.96	5.25	.84	−.53	116	.60
	Pleasant	5.78	.60	5.69	.54	.49	36	.63
	Neutral	5.56	.48	5.69	.41	−.89	38	.38
	Unpleasant	4.18	.84	4.40	.74	−.87	38	.39

Significant differences are shown in bold.
LT – Lithuania; US – United States; M – mean, SD – standard deviation

Similarly, arousal ratings of the same image categories were compared. Results showed significant differences: $F(2,56)=27.17$, $MSE=.15$, $p<.01$, $\eta_p^2=.49$. Pairwise comparisons revealed that ratings of pleasant and unpleasant images did not differ significantly ($p=.3$), but both of them were evaluated as more arousing compared to neutral images ($p<.01$). There were also significant differences between dominance ratings in categories: $F(2,56)=40.61$, $MSE=.58$, $p<.01$, $\eta_p^2=.59$. Pairwise comparisons showed very similar ratings of pleasant and neutral images ($p=1.00$). However, Lithuanian participants felt less in control while watching unpleasant images, compared to watching other images of two categories ($p<.01$).

During the next step of analysis separate comparisons of different samples (Lithuanian and US) were made for all, female only and male only participants for each image category (pleasant, neutral and unpleasant).

Results of paired t-tests for all images ratings by all subjects revealed no significant differences between Lithuanian and US sample in valence ($p=.80$), arousal ($p=.09$) and dominance dimensions ($p=.93$) (Table 1).

However, if only pleasant images are compared, results show that valence ratings were significantly lower in Lithuanian sample compared to US ($p<.01$). Similarly, arousal ratings were also lower in Lithuanian sample compared to US one ($p=.01$). In other words, the pleasant images in Lithuanian sample were rated as evoking significantly less positive and less arousing emotions. Neutral pictures ratings by valence ($p=.07$), arousal ($p=.56$) and dominance ($p=.58$) did not differ between samples. Differences were also found if only unpleasant images were considered. In this case valence ratings in Lithuanian sample were significantly higher than in US sample ($p<.01$). There were no significant differences in arousal ratings of unpleasant images ($p=.14$). These images were rated as evoking less negative emotions in Lithuanian sample. Dominance ratings of pleasant ($p=.70$), neutral ($p=.58$) and unpleasant ($p=.96$) images did not differ between samples (Table 1).

Ratings of all images in 'female only' group revealed no significant differences for valence and dominance ratings ($p>.05$). Nevertheless, there was a significant difference between samples in arousal ratings: US participants rated arousal of images higher than Lithuanian ($p=.02$). While comparing female ratings of only pleasant pictures, there were

also significant differences between the two samples. The valence ratings of pleasant pictures were higher in US female sample compared to Lithuanian ($p<.01$). There was a significant difference between samples for arousal ratings of pleasant pictures ($p<.01$). In Lithuanian sample arousal was lower than in US sample. Valence ratings of unpleasant pictures were lower in US female sample compared to Lithuanian female sample ($p<.01$). Arousal ratings did not significantly differ between samples ($p=.11$). There were also no significant differences for ratings of dominance dimension between the pleasant and unpleasant pictures ($p>.05$). Pleasant pictures were rated as less pleasant and arousing in Lithuanian female group, while unpleasant pictures were less unpleasant compared to US female sample. Ratings of neutral pictures for valence and dominance did not differ significantly between samples in female group ($p>.05$) (Table 1).

More differences were found in 'male only' group compared to 'all subjects' and 'female only' groups. Male participants did not differ in valence and dominance ratings of all images ($p>.05$). However, results show that pictures' arousal ratings in Lithuanian male group were higher than in US male group ($p=.03$). Moreover, valence ratings differed significantly in all three pleasure categories of images (in all these cases $p<.01$). Valence ratings of pleasant pictures in Lithuanian sample were lower than in US sample. Valence ratings of neutral pictures in Lithuanian sample were lower than in US sample as well. Valence ratings of unpleasant pictures were higher in Lithuanian sample compared to US sample. Ratings of neutral images were higher in Lithuanian male sample than in US ($p<.01$). However, there were no differences between samples coparing arousal ratings of pleasant and unpleasant pictures. Comparing of dominance ratings revealed no differences ($p>.05$) between Lithuanian and US male samples for all image categories: pleasant, neutral and unpleasant pictures (Table 1).

It should be mentioned that there was a significant difference between female and male groups in Lithuanian sample. Arousal ratings were higher in male group compared to female group ($p<.01$). However, there were no significant differences between genders in valence and dominance ratings (Table 2). Valence ratings of pleasant pictures were higher in Lithuanian female group compared to male group ($p<.01$). In contrast, arousal ratings of pleasant pictures were higher in male group than in female group ($p<.01$). Valence ratings of neutral pictures did not

differ significantly ($p>.05$). The arousal ratings were higher in male group compared to female group ($p<.01$). Valence ratings of unpleasant pictures were significantly lower in female group ($p<.01$). Arousal ratings of unpleasant pictures did not differ significantly between genders. There were no differences between genders in dominance ratings of neither of image categories.

Table 2 Comparison between Lithuanian female and male ratings of valence, arousal and dominance for different image categories.

		Female		Male				
Dimension	Category	M	SD	M	SD	t	df	p
Valence	All	4.97	.92	4.93	.76	.23	116	.82
	Pleasant	6.01	.30	4.23	.39	15.87	36	**<.01**
	Neutral	4.99	.40	4.87	.55	.77	38	.44
	Unpleasant	3.95	.42	5.66	.50	−11.69	38	**<.01**
Arousal	All	4.84	.73	5.60	.55	−6.35	116	**<.01**
	Pleasant	5.02	.44	5.62	.38	−4.49	36	**<.01**
	Neutral	4.18	.49	5.73	.49	−1.06	38	**<.01**
	Unpleasant	5.33	.69	5.43	.70	−.48	38	.63
Dominance	All	5.03	1.26	5.16	.96	−.64	116	.53
	Pleasant	5.69	.61	5.78	.60	−.46	36	.65
	Neutral	5.73	.78	5.56	.48	.81	38	.42
	Unpleasant	3.71	1.05	4.18	.84	−1.56	38	.13

Significant differences are shown in bold.
M – mean, SD – standard deviation

Finally, it must be mentioned that emotional evaluations of images in Lithuanian sample positively correlated with US sample in all three dimensions. The only exception was group of male participants, whose ratings of emotional valence and arousal correlated negatively between Lithuanian and US samples (Table 3).

Correlations between specific dimensions should be also analyzed. Although valence and arousal ratings correlated weakly ($r=-.27$, $p=.04$), correlations involving dominance dimension were more pronounced (valence – dominance $r=.77$, $p<.01$; arousal – dominance $r=-.61$, $p<.01$) in Lithuanian sample. These correlations are similar to those in US sample (valence – arousal $r=-.21$, $p=.11$; valence – dominance $r=.88$, $p<.01$;

arousal – dominance $r=-.5$, $p<.01$). It can be also added that ratings of valence and arousal positively correlated in the evaluations of pleasant pictures ($r=.3$, $p=.21$) and negatively – in the evaluations of unpleasant ($r=-.82$, $p<.01$) and neutral pictures ($r=-.39$, $p=.09$).

Table 3 *Pearson correlation between Lithuanian and US ratings for valence, arousal and dominance dimensions (for 'all subjects', 'female only' and 'male only' groups) in all, pleasant, neutral and unpleasant images.*

		All images	Pleasant	Neutral	Unpleasant
Valence	All subjects	.94**	.60**	.62**	.66**
	Female	.96**	.60**	.72**	.75**
	Male	−.79**	−.29	−.35	−.68**
Arousal	All subjects	.81**	.66**	.60**	.79**
	Female	.85**	.66**	.76**	.81**
	Male	−.60**	−.70**	−.63**	−.50**
Dominance	All subjects	.92**	.79**	.73**	.81**
	Female	.91**	.77**	.79**	.80**
	Male	.86**	.61**	.45**	.78**

** p<.01, * p<.05.

Although Lithuanian and US sample's ratings correlated highly (valence: $r=.94$, $p=.01$; arousal: $r=.81$, $p=.01$; dominance: $r=.92$, $p=.01$), there was a difference in the range of mean ratings. Average valence ratings of different images varied from 3.97 to 5.92 in Lithuanian sample. In other words, 98.31% from the 59 selected images were rated from 4 to 6 (i.e. representing neutral emotions), and only one image (IAPS number 3213, depicting a surgery) had a lower average rating. The ranges of mean ratings varied much more in the US sample – from 1.62 to 7.83. 33.89% of them were below 4 (unpleasant), 33.89% – between 4 and 6 (neutral), 32.2% – above 6 (pleasant).

Nevertheless, the results showed that Lithuanian ratings were dependent on the pleasure category of pictures, which was based on valence ratings in US norms (according to it, one third of images belonged to unpleasant, one third – to neutral, and one third – to pleasant category). The limited spread of ratings in Lithuanian sample was also observed in arousal dimension. 98.31% of images had an average arousal rating between 4 and 6. The only exception was the same single image (IAPS number 3213), which was rated as more arousing. In comparison,

11.86% of mean ratings of US participants were in the range of below 4, 66.1% in the range from 4 to 6 and 22.03% in the range of above 6. However, dominance ratings were more similar between Lithuanian and US participants. 23.73% of images in Lithuanian sample had an average rating lower than 4 (i.e. representing submission of emotions), 50.85% of images were rated from 4 to 6, and 25.42% of them had an average rating higher than 6 (i.e. representing control over emotions). In case of US sample, the percent were 23.73%, 61.02% and 15.25%, respectively.

Interestingly, when gender is considered, ratings of Lithuanian participants vary more in all dimensions. For example, on average 10.17% of pictures were rated as unpleasant by men and 22.03% – by women. Moreover, 79.66% of images were rated as having neutral valence in male and 59.32% – in female participants' samples. 10.17% of images were pleasant for men and 18.64% – for women. Similar increase in variability was noticed in arousal dimension. Although none of the pictures were rated as calming by men, women gave such ratings for 10.17% of pictures. Male participants choose neutral ratings for 81.36% of images, while female participants did the same for 84.75% of pictures. 18.64% of images were rated as highly arousing for men and 5.08% – for women. As for the dominance dimension, 15.25% of images were considered as evoking submission feelings in male sample, while such feeling was evoked by 23.73% of pictures for women. 66.1% of images were rated as neutral by male and 50.85% by female participants. Lastly, 18.64% of pictures evoked feelings of dominance for men and 25.42% for women.

DISCUSSION

The goal of this study was to determine the ratings of IAPS pictures in the dimensions of valence, arousal and dominance in Lithuanian students' sample, and compare them to original US sample (Lang et al., 2008). The data provided valence, arousal and dominance ratings for images, which, based on US norms, could be considered as pleasant, neutral or unpleasant. Results showed that there was a high correlation between Lithuanian and US samples in all three emotional dimensions. This supports the usability of IAPS in different cultural backgrounds. The similarity in Lithuanian and US participants' evaluations of images is also supported by the fact that there were no significant differences in the mean ratings of valence and dominance between the two groups. There

was, however, a significant difference in arousal ratings. The latter fact was expected, because separate publications show the inconsistency of arousal ratings in different studies (Drače et al., 2013; Dufey et al., 2011; Grühn & Scheibe, 2008; Lasaitis et al., 2008; Lohani et al., 2013; Moltó et al., 1999; Ribeiro et al., 2005; Vila et al., 2001). Such differences are usually explained by cultural diversity. Lithuanians are usually considered as reserved people who avoid displaying emotions. Thus, it remains unclear, whether lower mean ratings of arousal in Lithuanian sample show low arousal evoked by IAPS images or simply unwillingness of participants to report high ones. However, Bradley and Lang (2007) noted that IAPS can be sensitive for intercultural differences in emotional disposition.

The reserved nature of Lithuanian people can also be the primary reason of clearly visible differences between Lithuanian and US participants while comparing the variability of ratings. In the US sample the full range of evaluations was observed, whereas ratings concentrated around middle value (~5) in Lithuanian sample. Nevertheless, pictures, which were evaluated as more pleasant by US participants, where also rated higher in valence by Lithuanian students. This shows that even though specific ratings might differ, the direction of the ratings remains the same. That is, the same pictures are evaluated as evoking positive emotions by both Lithuanian and US participants.

Gender differences are not often taken into consideration when studying cultural differences by the ratings of affective pictures (Drače et al., 2013). Although the number of male and female participants in our study was not equivalent between two gender groups, our results showed the tendency for men to be more aroused by pleasant pictures, whereas an opposite tendency was observed with unpleasant pictures – women were more aroused by unpleasant images compared to men. Such results are similar to Chilean sample (Dufey et al., 2011). These results suggest that gender is an important factor for rating affective pictures in different cultures (Davis et. al., 2013).

It is important to note some limitations of the study. At first, there was a different number of female and male participants, although the results regarding the gender differences were in line with others studies (Dufey, 2011; Davis, 2013). Another limitation was the stimuli set, which was chosen for the research. Our results showed that arousal of emotions evoked by selected pictures were rated as close to neutral. That is why future studies should consider using more arousing images and bigger

variety of them. Moreover, psychophysiological measures should be also considered and compared with self-reports, because this would allow to make a more accurate assessment of emotions.

Nevertheless, based on the results of the current study, it can be concluded that IAPS can be used for emotion studies in Lithuania, but the tendency of participants to use neutral values should be noted.

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TARPTAUTINĖS EMOCIJAS SUKELIANČIŲ VAIZDŲ SISTEMOS UNIVERSALUMAS: LIETUVOS STUDENTŲ POPULIACIJOS

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Santrauka. Emocijoms tirti taikomi labai įvairūs metodai. Vienas iš populiariausių yra *Tarptautinė emocijas sukeliančių vaizdų sistema* (IAPS, angl. *International Affective Pictures System*), kuri taikoma tiriant emocijas, kognityvines funkcijas, elgseną ir kitas sritis. Nors ši metodika naudojama skirtingose šalyse, kultūriniai skirtumai gali daryti įtaką rezultatams. *Tyrimo tikslas* – nustatyti IAPS vaizdų valentingumo, sužadinimo ir kontroliavimo vertinimus, tiriant lietuvių studentų imtį, ir palyginti su normatyviniais vertinimais, surinktais tiriant Jungtinių Amerikos Valstijų (JAV) studentus. *Metodika ir rezultatai.* Tyrime dalyvavo 103 psichologijos specialybės studentai, kurie įvertino vieną iš IAPS rinkinių, sudarytą iš 59 skirtingų (malonių, neutralių ir nemalonių) nuotraukų. Gauti rezultatai parodė, kad vaizdų vertinimas pagal visus aspektus (valentingumo, sužadinimo, kontroliavimo) stipriai koreliuoja su normatyvinės grupės vertinimais. Tačiau lietuvių studentai vaizdų sukeliamų emocijų valentingumą ir sužadinimą buvo linkę vertinti neutraliau, lyginant su JAV studentais. Lietuvių imtyje gauti skirtumai tarp lyčių parodė, kad vyrus stipriau sužadino malonūs vaizdai, o moteris – priešingai. *Išvados.* IAPS vaizdai emocijoms tirti gali būti taikomi Lietuvoje.

Pagrindiniai žodžiai: IAPS, emocijas sukeliantys vaizdai, emocijos, lytis, kultūra.