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Culture, Attention, and Emotion

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This research provides experimental evidence for cultural influence on one of the most basic elements of emotional processing: attention to positive versus negative stimuli. To this end, we focused on Russian culture, which is characterized by brooding and melancholy. In Study 1, Russians spent significantly more time looking at negative than positive pictures, whereas Americans did not show this tendency. In Study 2, Russian Latvians were randomly primed with symbols of each culture, after which we measured the speed of recognition for positive versus negative trait words. Biculturals were significantly faster in recognizing negative words (as compared with baseline) when primed with Russian versus Latvian cultural symbols. Greater identification with Russian culture facilitated this effect. We provide a theoretical discussion of mental processes underlying cultural differences in emotion research.

Keywords: culture, attention, emotion, acculturation, biculturals

Social scientists currently think of culture as shared knowledge and mutual expectations produced, disseminated, and reproduced among a network of interacting individuals (Bruner, 1990; D'Andrade, 1984; DiMaggio, 1997; Kashima, Woolcock, & Kashima, 2000; Sperber, 1996), following a long tradition going back at least to Pitt-Rivers (1954). Over the past 20 years cultural psychologists have demonstrated that people from different cultures differ in basic perceptual processes (e.g., Chua, Boland, & Nisbett, 2005; Gutchess, Welsh, Boduroğlu, & Park, 2006; Masuda & Nisbett, 2006), causal reasoning (Choi, Nisbett, & Norenzayan, 1999), and values (Schwartz, 1992; Triandis, 1990). However, comparisons of people from two cultures are plagued by confounds such as economic, linguistic, historical, and ecological differences (Whiting, 1968).

An ingenious method for circumventing these confounds is to use a within-subject design, testing people who grew up in two cultural environments, priming them with symbols triggering associations with one or the other of the two cultures, and examining the consequences for cognitive processes (Hong, Benet-Martínez, Chiu, & Morris, 2003; Hong, Morris, Chiu, & Benet-Martínez, 2000). For example, researchers randomly exposed Chinese Americans to pictures of either Chinese symbols (e.g., the Great Wall) or American symbols (e.g., the Statue of Liberty). When primed with Chinese cultural symbols, Chinese Americans attributed events more to the situation (a pattern typical of Chinese) and less to personal dispositions (a pattern typical of American; Choi, et al., 1999). When primed with American cultural symbols, the reverse was the case. These findings have been extended to Dutch Greek biculturals (Verkuyten & Pouliasi, 2002, 2006) and to such domains as self-construal (Ross, Xun, & Wilson, 2002) and cooperative behavior (Wong & Hong, 2005).

Before the cognitive revolution, however, sociologists such as Durkheim (1912/1968) and anthropologists (e.g., Benedict, 1934/1959; Mead, 1961) defined cultures more in terms of emotional than cognitive tendencies. Emotional differences between cultures were also discussed in Markus and Kitayama's (1991) article, which inaugurated the field of cultural psychology and stimulated a number of studies on cultural differences in emotions. Researchers explored the influence of social orientation toward independence versus interdependence on emotional experience (e.g., Kitayama, Mesquita, & Karasawa, 2006) and emotional reactivity (Chentsova-Dutton & Tsai, 2010). Others examined how independent and interdependent cultures differed in their preference for high versus low arousal emotions (Lutz & White, 1986; Tsai, Chentsova-Dutton, Freire-Bebeau, & Przymus, 2002) or in the simultaneous experience of positive and negative emotions (e.g., Miyamoto, Uchida, & Ellsworth, 2010; Perunovic, Heller, & Rafaeli, 2007; Shiota, Campos, Gonzaga, Keltner, & Peng, 2010). A related line of work suggested that the centrality of particular emotions is systematically related to the moral centrality of autonomy, community, or divinity in a cultural group (e.g., Rozin, Lowery, Imada, & Haidt, 1999; Shweder, Much, Mahapatra, & Park, 1997). Most of these studies have focused on the prevalence or importance of different kinds of emotional experiences, with little attention to the processes underlying cultural differences in emotion.

Theories of emotions (Ellsworth, 1994; Kagan, 1991), combined with recent neuroscientific (Pessoa, McKenna, Gutierrez, & Ungerleider, 2002) and clinical work (e.g., Joormann & Gotlib, 2007), suggest that attention is at the core of emotional processing.

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Building upon this work, we decided to examine one of the most immediate possible sources of cultural difference: attention-related orientation to affective stimuli. Early ethnographic observations suggest that such differences in attending to positive versus negative information may exist. Summarizing beliefs about Russian culture, Grossmann and Kross (2010) recently showed that Russians are often characterized as brooders—immersing themselves in negative feelings (Berdyaev, 1962; Inkeles & Bauer, 1959) and ascribing more positive value to this process than Westerners (Pavlenko, 2002; Wierzbicka, 2003). This notion is also supported by empirical studies indicating that Russians are more likely than Americans to say that they focus on their negative experiences (Grossmann & Kross, 2010) and that Russian American bilinguals report past experiences as more negative when instructed to recall the events in Russian than in English (Marian & Kaushanskaya, 2004).

Overview of the Current Research

Study 1 provided exploratory evidence for attention-related cultural differences between Russians and Americans by comparing time spent on looking at positive versus negative pictures, with more time indicating greater orientation to the stimulus. Study 2 used a within-subject design to experimentally test whether priming cultural symbols of Russian versus Latvian culture (different in dominant religion and history of colonization) leads to differential recognition of positive versus negative stimuli among biculturals. In contrast, ~~in~~ Study 2 we operationalized higher stimulus recognition as shorter response latency identifying positive versus negative words.

Study 1

The goal of Study 1 was to provide an initial test of the hypothesis that Russian culture promotes a tendency to focus on negative versus positive emotion-eliciting stimuli. We examined cultural differences in voluntary attention to positive and negative visual stimuli among Russians and Americans. We predicted that Russians would attend to negative rather than positive stimuli more than Americans.

Method

Participants. Sixty-four (30 women, 34 men; M_{age} = 18.78 years, SD = 0.85) European American students from the University of Michigan and 69 (48 women, 21 men; M_{age} = 19.06 years, SD = 1.49) Russian students from the Moscow State Regional University participated for course credit.

Procedure and materials. Participants completed the study on their own, guided by written instructions informing them that the study was about human reasoning. They were told: "You will be shown a set of 36 pictures. These pictures will be used later in the study. Please take as much time as you need to get familiar with the pictures." Participants were instructed to "press the spacebar to continue to the next picture." Before being exposed to the experimental stimuli, they completed nine practice trials with pictures of clouds. The experimental stimuli were equally unfamiliar to Russians and Americans, because they were taken from the standardized International Affective Picture System (Lang, Bradley, & Cuthbert, 2005). The 36 photographs (14 animals and 22 humans, 18 positive and 18 negative, selected for good valence discrimination on the International Affective Picture System norms: 1.95–4.79 negative vs. 6.11–8.34 positive, on a 9-point scale) were presented with identical displays in both countries in a random order. All materials were back translated from English into Russian (Brislin, 1970). Participants' response latency between the onset of the photograph presentation and key pressing was recorded, log transformed due to skewness, and collapsed into scores of attention-related orientation toward positive and negative stimuli.

Results and Discussion

To control for individual differences in general effort on the task, we included the total time spent looking at the pictures as a covariate. Because the Russian sample had more women than the American sample, $\chi^2(1, N = 133) = 7.05$, $p < .01$, we included gender as a second covariate.

The results of a mixed general linear model with two within-subject factors (valence: positive vs. negative; picture type: animal vs. human), culture (−[1/2] = United States, [1/2] = Russia) as a between-subjects factor, and gender (−[1/2] = male, [1/2] = female) and centered total time as covariates revealed a significant Culture × Valence interaction, $F(1, 128) = 6.31$, $p = .01$, $\eta_p^2 = .05$. This effect was not qualified by type of photograph, gender, or total time on task (Fs < 1.2). As Figure 1A illustrates, Russians spent significantly less time looking at positive pictures than negative pictures, $F(1, 66) = 11.02$, $p = .001$, $\eta_p^2 = .14$, whereas Americans spent about the same amount of time looking at positive and negative pictures, $F(1, 61) < 1$, *ns*. F1

Study 2

The findings from Study 1 provide initial evidence supporting the idea that cultural differences in orientation to negative versus positive stimuli exist. Whereas Russians predominantly attended to negative pictures, Americans spent about the same amount of time looking at both type of stimuli. However, there could be individual or cultural differences besides Russian melancholy that might explain the difference between Russians and Americans. To control for these confounds, we used a within-subject cultural frame-switching paradigm (Chao, Chen, Roisman, & Hong, 2007; Hong

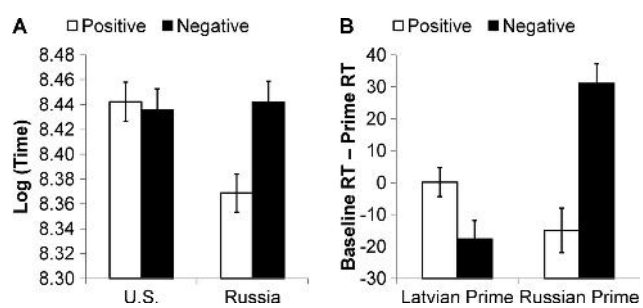

Figure 1. (A) Means and standard errors of log time spent watching positive and negative stimuli in Study 1, adjusted for gender and total time spent watching photographs. (B) Means and standard errors of facilitation scores in Study 2. RT = reaction time.

et al., 2000), in which we controlled for baseline responses to the same stimuli and measured speed of recognition of negative versus positive words. More important, we examined the causal link between cultural priming and emotional processing by testing the effects of cultural priming on recognition of emotional information among Russian Latvian biculturals.

We contrasted Latvian and Russian cultures for several reasons. Russian Latvians are the largest minority in Latvia (e.g., 42.1% vs. 42.3% Latvians in the capital; Riga City Council, 2009). Though both societies went through similar socioeconomic transitions in the late 20th century, Latvia has been long influenced by Western Europe (Germans and Scandinavians), as indicated by the dominant religion (Lutheran) and a long history of colonization by Germans (Purs, 2005). Latvians are similar to Scandinavians in individualism and higher than Russians. (Huettinger, 2008). If the Western European cultural orientation among Latvians (Manning & Poljeva, 1999) extends to emotional processing, cultural priming with Russian (vs. Latvian) symbols should result in more attention and faster processing for negative stimuli.

In addition, Study 2 examined how focus on positive and negative information varies as a function of participation in Russian cultural practices. We built upon previous research showing that stronger identification with a culture leads to an affective pattern that is congruent with that culture (Perunovic et al., 2007), suggesting that participation in cultural practices would moderate the effect of switching cultural knowledge systems (Hong et al., 2000). We predicted that greater involvement in Russian cultural practices would result in greater focus on negative relative to positive stimuli. This prediction also helps us to rule out the alternative explanation that the expected differential responses toward positive versus negative stimuli as a function of the priming condition were simply a result of matching stereotypes, which should not be affected by cultural practices.

Method

Participants. Forty-seven (20 men, 27 women; $M_{\text{age}} = 20.49$ years, $SD = 2.16$) Russian Latvian biculturals from the Latvian capital, Riga, participated in the study. The participants were recruited via flyers at several local universities and ads in the newspapers. Participants received 4 lats (approximately $8) for their participation.

Procedure and materials. Participants were told by a Latvian experimenter that the experiment concerned perceptual performance and that a series of pictures would appear on the screen, each followed by a string of letters.

Within-subject cultural priming task. Adopting a sequential priming method to cultural frame switching (Chao et al., 2007; Fazio, Jackson, Dunton, & Williams, 1995), we presented Russian Latvians with Latvian versus Russian pictorial symbols as primes to activate a Russian versus a Latvian cultural knowledge system (Hong et al., 2000). In a neutral condition, pictures of clouds were used as primes (Chao et al., 2007). Participants were asked to distinguish words from nonwords presented shortly after the primes as quickly and accurately as possible by pressing < or > on the keyboard. Participants' response latency between the onset of the target word and key pressing was recorded. Half the target words were positive, and half negative, and we examined the extent to which the Russian versus Latvian symbols facilitated or inhibited identification of positive versus negative words.

Materials. The primes consisted of 15 pictures of Latvian and Russian cultural icons and neutral images. The cultural icons were judged to be symbolic of the respective cultures by a panel of Russian Latvian bicultural experts including PhD students and professors of psychology at the University of Latvia. These cultural icons were selected from and matched for a variety of domains: architecture, arts and folklore, literature, and national and religious symbols (see Figure 2). The targets consisted of five F2 positive (*courteous = laipni*, *diligent = čakli*, *assiduous = centīgi*, *friendly = draudzīgi*, *helpful = izpalīdzīgi*) and five negative adjectives (*drunk = piedzēries, intemperate = nesavaldīgi*, *unsociable = noslēgti*, *lazy = kūtri*, *small-minded = ~~patmīlīgs~~*), which were comparable in frequency of use (based on the Google Latvia online references: 1,509,300 positive vs. 1,375,100 negative) and were also judged by focus groups of bicultural experts as clearly positive or negative and commonly used in social interactions. The

Figure 2. Latvian versus Russian cultural priming stimuli in Study 2. All pictures were presented in identical resolution (either 230 × 350 or 350 × 230 pixels).

nonwords were letter strings formed by scrambling the letters of the target words.

Stimulus presentation. Priming stimuli were presented on a 15-in. (38.10-cm) screen for 250 ms, followed by a 100-ms interstimulus interval and the target stimuli. The intertrial interval was set at 1,500 ms to prevent carry-over priming effects. The stimuli were presented to the participants in a random order in three blocks (360 trials each; each prime was paired with a target word or nonword once), with a 30-s break after the first two blocks. Four practice trials with neutral primes and targets preceded the experimental trials. None of the practice trial stimuli were used in the experimental trials.

Acculturation to Russian culture. Finally, participants completed a questionnaire in which questions about their participation in Russian cultural practices and demographic questions were embedded. Engagement in Russian cultural practices was assessed by a Latvian version of the General Ethnic Questionnaire (Tsai, Ying, & Lee, 2000). The questions on the questionnaire capture a wide range of life domains, including social networks, participation in cultural activities, and exposure to the media (e.g., watching Russian television). Participants indicated the extent to which they agreed with each of 38 statements (1 = *strongly disagree* to 5 = *strongly agree*; $\alpha = .94$), which were collapsed into a single index.

Results and Discussion

Only responses to words ("yes" responses) were included in the analyses. Following the data reduction procedure used by Chao et al. (2007), participants' response latency toward the same target words when preceded by neutral primes was used as the baseline to control for the initial word frequency differences. Next, we obtained a priming facilitation score for each prime type by subtracting the average priming response latencies of each set of target words from the baseline scores. Neither age nor gender interacted with the predictor variables, and controlling for them did not influence any of the results. Further, results did not vary substantially when performing blockwise analyses. Thus, these variables are not discussed further.

We submitted participants' reaction times to a 2 (prime: Russian or Latvian) × 2 (target: positive or negative) within-subject general linear model. The analysis revealed a significant Prime × Target interaction, $F(1, 46) = 36.64$, $p < .001$, $\eta_p^2 = .44$. As Figure 3 illustrates, responses toward negative target words were facilitated when preceded by Russian primes compared with Latvian primes, $t(46) = 6.31$, $p < .001$. Similarly, responses toward positive words were inhibited when preceded by Russian primes compared with Latvian primes, $t(46) = 2.21$, $p = .03$.

The effect of exposure to Russian versus Latvian cultural practices was examined by submitting participants' reaction times to a 2 (prime: Russian or Latvian) × 2 (target: positive or negative) by Russian exposure mixed linear model with centered General Ethnic Questionnaire score. This analysis revealed a significant moderation of the Prime × Target interaction by the degree of exposure to Russian culture, $F(1, 45) = 9.64$, $p < .005$, $\eta_p^2 = .18$. As Figure 3 illustrates, the effect size of the Prime × Target interaction was high when exposure to Russian culture was high (plus 1 standard deviation), $F(1, 45) = 46.88$, $p < .001$, $\eta_p^2 = .51$, and lower when exposure to Russian culture was low (minus 1 standard deviation), $F(1, 45) = 5.92$, $p = .02$, $\eta_p^2 = .12$.

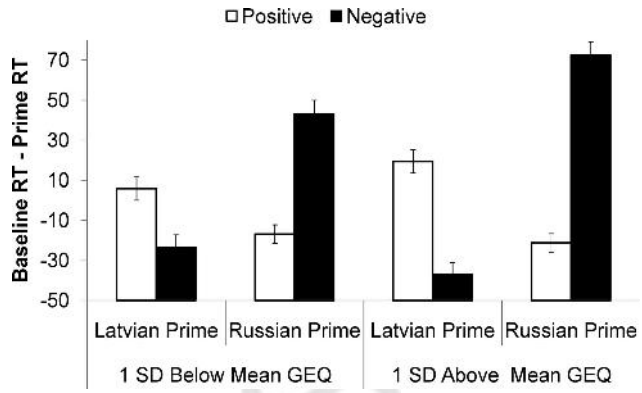

Figure 3. Means and standard errors for facilitation scores in Study 2 at 1 standard deviation below and 1 standard deviation above the mean level of participation in Russian culture. Standard errors are based on the full sample. RT = reaction time; GEQ = General Ethnic Questionnaire.

General Discussion

The present experimental evidence suggests that culture influences basic emotional processing. When presented with a series of images, Americans did not discriminate between pleasant and unpleasant ones; Russians spent more time looking at the unpleasant images. When people with both Russian and Latvian cultural backgrounds were reminded of their Russian roots, they were relatively faster at recognizing negative traits, but reminders of their Latvian roots made them relatively slower at recognizing negative traits. This priming effect was greater for those Russian Latvians who identified themselves with Russian culture, suggesting that the pattern of results was unlikely to be a simple effect of matching stereotypes or negative association with Russia.

What could be the mental processes at work in cultural differences in emotion? What is it about the way people perceive their environment that makes Russians melancholy? Our research suggests that cultural differences in emotion may be driven by attention-related tendencies linked to information processing. A variety of other processes might be at work, too, including other attentional processes, and a full picture of the role of cultural differences in emotion requires a comprehensive understanding of the range of possibilities.

First, given any sort of complex stimulus, people's initial attention may be attracted by elements with different emotional implications. Russians may notice negative elements more quickly than people from other cultures. Indeed, our results showed that priming Russian culture activated faster recognition of negative (vs. positive) traits. Second, once people have noticed emotional stimuli, they may spend more or less time attending to them. As we showed, Russians spent less time attending to positive stimuli. Third, members of different cultures might appraise the same event in different ways (Scherer, 1997). Russians might see an ambiguous event as negative, whereas others see it as positive. Similar processes could exist in memory, so that when remembering a negative event, members of some cultures may ruminate more extensively about it (Grossmann & Kross, 2010), or focus on the negative aspects of an event. When reflecting on the past in general or on some period of one's former life, Russians may recall more negative events. Finally, cultural differences could be a matter of

impression management or adherence to cultural stereotypes and values (Robinson & Clore, 2002), as people try to exemplify the emotions that are admired in their culture. Thus, Americans may feel that they should say that they are happy, look happy, and act happy in order to show that they are successful members of their culture. Russians may emphasize darker emotions in order to look like good Russians. Any or all of these processes may contribute to cultural differences in emotion.

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