

Generality and Cultural Variation in the Experience of Regret

Seger M. Breugelmans
Tilburg University and Higher School of Economics

Marcel Zeelenberg
Tilburg University

Thomas Gilovich
Cornell University

Wen-Hsien Huang
National Chung Hsing University

Yaniv Shani
Tel-Aviv University

Regret is the prototypical decision-related emotion. Most theory and research on regret comes from the United States and Europe, but recent research has suggested potential cross-cultural differences in regret. We examined generality and cultural variation in the experience of regret. A cross-cultural study compared experiences of regret with those of disappointment and guilt as reported by participants from the United States ($n = 143$), the Netherlands ($n = 147$), Israel ($n = 148$), and Taiwan ($n = 115$). We found strong evidence for generality of the distinct emotion components of regret, compared with those of disappointment and guilt. We also found cultural variation in the frequency and intensity of regret in intrapersonal situations (regrets about outcomes affecting the self) and interpersonal regrets (regrets about outcomes affecting others). Whereas in the U.S. sample, regret was experienced more intensely in intrapersonal than interpersonal situations, both emotions were experienced more intensely in interpersonal situations in the Taiwanese sample.

Keywords: regret, guilt, disappointment, culture

Regret plays a central role in decision making; it is felt when decision makers realize that their current situation would have been better had they decided differently (Landman, 1993). Insights into the role of regret in decision making date back at least to Savage (1951), and were formalized in the early 1980s by Bell (1982), Loomes and Sugden (1982), and Sage and White (1983). Subsequent research has mainly focused on factors influencing the elicitation and experience of regret (e.g., Gilovich & Medvec, 1995; Zeelenberg & Pieters, 2007) and on how (anticipated) regret affects the choices people make (e.g., Mellers & McGraw, 2001; Zeelenberg, Beattie, van der Pligt, & De Vries, 1996). Knowledge gained from this research has been applied in a wide variety of fields, including marketing (Inman & McAlister, 1994; Simonson,

1992), law (Guthrie, 1999), organizational behavior (Maitlis & Ozcelik, 2004), medicine (Djulgovic, Hozo, Schwartz, & Mc-Masters, 1999; Tymstra, 1989), health psychology (Connolly & Reb, 2005), and neuroscience (Coricelli et al., 2005).

It is noteworthy that nearly all of the existing work on regret has been conducted in Western countries (for three exceptions in China, see Huang & Zeelenberg, 2012; Lin, Huang, & Zeelenberg, 2006; Zhang, Walsh, & Bonnefon, 2005). This begs the question of whether existing theories and findings generalize across cultures. Several studies suggest that regret may not be the same across cultures. For example, Hur, Roese, and Namkoong (2009) found that, compared with Americans, experiences of regret on the part of Koreans were more sensitive to whether an intrapersonal or interpersonal norm was violated. Komiya, Miyamoto, Watabe, and Kusumi (2011) found that Japanese students experienced regret more strongly than American students in interpersonal situations, but that no such difference appeared in intrapersonal situations. On a more general note, cross-cultural differences have been observed in notions of agency (Markus & Kitayama, 1994), patterns of attribution (see Semin & Zwiener, 1997), and the structure of counterfactual thinking (Chen, Chiu, Roese, Tam, & Lau, 2006), all of which play important roles in the experience of regret.

Any full account of a particular emotion has to be grounded in an understanding of the extent to which it is culture-general or culture-specific. Anticipated regret is one of the most important determinants of choice in many models of decision making, explaining behavior over and above expected utility models. Most evidence for the role of regret, however, comes from a relatively narrow subset of the world's people (cf. Henrich, Heine, & Noren-

This article was published Online First November 3, 2014.

Seger M. Breugelmans, Department of Social Psychology, Tilburg University, and International Scientific-Educational Laboratory for Socio-Cultural Research, Higher School of Economics; Marcel Zeelenberg, Department of Social Psychology, Tilburg University; Thomas Gilovich, Department of Psychology, Cornell University; Wen-Hsien Huang, Department of Marketing National Chung Hsing University; Yaniv Shani, Marketing Department, Tel-Aviv University.

Support from the Basic Research Program of the National Research University Higher School of Economics is gratefully acknowledged.

Correspondence concerning this article should be addressed to Seger M. Breugelmans, Department of Social Psychology and Tilburg Institute for Behavioral Economics Research (TIBER), Tilburg University, PO Box 90153, 5000 LE Tilburg, The Netherlands. E-mail: sbreugel@tilburguniversity.edu

zayan, 2010). We are in a better position to build more general models of decision making if we can be confident that the psychological process that we call regret can be observed across cultures or, alternatively, when we know how regret varies across cultural populations. Studying generality and cultural variation in regret is therefore vitally important.

We avoid the use of universality in this context because this term has acquired a particularly strong meaning in emotion research as a consequence of the enduring universalism–relativism debate (see Ekman, 1994; Gendron, Roberson, van der Vyver, & Barrett, 2014; Russell, 1994), and because there are many possible meanings of universality in cross-cultural research at large (Lerner, 2011). In more technical terms, by generality, we refer in this article to structural equivalence of experiences of regret (van de Vijver & Leung, 1997).

There are several reasons why our existing knowledge about cultural variation in the experience of regret is limited. First, regret is not included in the list of basic emotions that have been studied extensively across cultures. Unlike emotions such as anger, fear, or disgust, regret is not characterized by observable (facial) expressions or psychophysiological profiles that have been used in cross-cultural studies (see Berry, Poortinga, Breugelmans, Chasiotis, & Sam, 2011). It has been shown that regret can be reliably assessed by measuring the subjective experience of various emotion components, such as appraisals, action tendencies, and motivational goals (e.g., Zeelenberg & Breugelmans, 2008; Zeelenberg, van Dijk, Manstead, & van der Pligt, 1998), but large-scale cross-cultural studies using such experiential measures typically have not included regret (cf. Fontaine, Scherer, Roesch, & Ellsworth, 2007; Scherer & Wallbott, 1994). Second, the few cross-cultural studies reported in the literature have focused on the antecedents of regret and/or on the intensity with which regret is experienced in different situations (e.g., Gilovich, Wang, Regan, & Nishina, 2003; Hur et al., 2009; Komiya et al., 2011). No studies have been conducted to examine the nature of the experience of regret itself across different cultures. Third, the few cross-cultural studies that have dealt with regret have measured it by means of a single emotion word: “regret.” This makes the existing findings difficult to interpret because emotion constructs tend not to translate well across languages (e.g., Mesquita & Frijda, 1992; Russell, 1991). As a case in point, there has been an extensive discussion of whether Dutch research findings on *spijt* are relevant to English findings on “regret” because the emotion words are not semantically and psychologically equivalent (Connolly, Ordóñez, & Coughlan, 1997; Ordóñez & Connolly, 2000; Zeelenberg, van Dijk, & Manstead, 1998, 2000). One can readily imagine that if translation is an issue in languages that are as closely related as Dutch and English, it would be even more of a problem for languages that are further apart. Some researchers try to go around translation issues by not using the word regret in their measurement, but simply asking for how positive or negative the decision makers feel and whether they would like to have chosen differently (e.g., Komiya, Watabe, Miyamoto, & Kusumi, 2013). Although this may overcome some of the translation issues, it may also result in findings that are relevant for understanding general affective reactions, while at the same time, these are not informative for regret. The discussion between Connolly et al. (1997) and Zeelenberg, van Dijk, & Manstead (1998) showed that findings for general affect and regret can be very different. Thus, when inter-

ested in regret, we believe it is important to assess regret in a valid and reliable way.

The goal of the research reported here was to fill the gap in existing knowledge of cultural variation in the experience of regret. This was done by studying self-reported experiences of regret in four countries: the United States, the Netherlands, Israel, and Taiwan. Taking the United States as our reference sample, the other samples represent groups that are increasingly distant. The Netherlands represent a Western culture with a different Indo-European language; Israel represents a Western culture with an Afro-Asiatic language; and Taiwan represents an East Asian culture with a Sino-Tibetan language.

Any cross-cultural study of emotion has to take account of a number of methodological issues (over and above technical issues such as adequacy of translations) that may threaten the interpretation of any apparent findings. For example, we had to take into account that cultural variation in emotion can be defined at different levels (Berry et al., 2011; Fontaine, 2011). For example, cultural groups could differ in the thoughts, feelings, and actions that make up an experience of regret; they could differ in the frequency with which people experience regret; or they could differ in the intensity with which regret is experienced in a particular situation. In addition, research materials may be culturally biased, leading to variation in responses across cultures that are not indicative of variation in the underlying emotion (see van Hemert, Poortinga, & van de Vijver, 2007). Next, we briefly discuss various features of our study design that we implemented to deal with such interpretative issues.

First, to avoid imposing a particular notion of emotion on our participants, we used a purely inductive method to establish whether experiences of regret are distinct and cross-culturally stable. That is, we asked people to report on personal experiences of regret without imposing any restriction on what such experiences should encompass. Second, we compared participants' experiences of regret with those of the two most closely related emotions that are nonetheless distinct from regret, namely, disappointment and guilt (Giorgetta, Zeelenberg, Ferlazzo, & D'Olimpio, 2012; Zeelenberg & Breugelmans, 2008). Disappointment is related to regret, in the sense that it is also studied in the context of decision making, and is typically defined as “a psychological reaction to an outcome that does not match up against expectations” (Bell, 1985, p. 1). Ample research, reviewed in Zeelenberg, van Dijk, Manstead, and van der Pligt (2000), has shown that regret and disappointment differ in their antecedents and in how they are experienced. Guilt is related to regret in the sense that both emotions are felt over negative outcomes that are the result of one's behavior (Berndsen, van der Pligt, Doosje, & Manstead, 2004). Guilt “combines feelings of distress over another person's well-being with a sense of personal responsibility” (Nelis, Breugelmans, & Zeelenberg, 2013, p. 359). The predominant focus on others' well-being differentiates guilt from regret (Zeelenberg & Breugelmans, 2008). Before we compare the experience of regret across cultures, we first compare it with that of related emotions within cultures. Regret should be equally distinct from disappointment and guilt in each culture if it is to be taken to represent a similar psychological process. Third, instead of a single emotion word, we measured the experience of regret, guilt, and disappointment by using scales tapping various emotion components (appraisals, self-experiences, bodily sensations, action ten-

dencies, motivational goals; e.g., Mesquita, Frijda, & Scherer, 1997; Roseman, Wiest, & Swartz, 1994; Saffrey, Summerville, & Roese, 2008; Scherer & Wallbott, 1994). For cross-cultural comparisons, such scales offer the important advantage that the structural equivalence of emotions can be empirically assessed even when emotion categories differ across languages (Breugelmans & Poortinga, 2006; van de Ven, Zeelenberg, & Pieters, 2009).

Emotion components that are characteristic of regret have been identified in several studies. These components overlap substantially in terms of the experiences that elicit or capture the emotion of regret (convergent validity), and they have also been shown to be distinct from the components characteristic of other emotions such as disappointment and guilt (discriminant validity). We constructed our scale items (emotion components) on the basis of studies using an autobiographical recall procedure (the same as used in our research) to distinguish regret from disappointment and regret from guilt. The items were chosen to represent the thoughts, experiences, action tendencies, motivational goals, and emotion words that should be distinct for disappointment, regret, and guilt. Building on previous research (Breugelmans & Poortinga, 2006; Zeelenberg & Breugelmans, 2008; Zeelenberg, van Dijk, Manstead, & van der Pligt, (1998), we hypothesized that regret would be characterized by the thoughts “I thought that I had made a mistake, and I thought that I was responsible for the situation”; by the experience “I felt angry with myself”; by the action tendencies “I wanted to kick myself, I wanted to correct my mistake”; by the motivational goal “I wanted to do things differently in the future”; and by the emotion word “I felt regret.” We hypothesized that disappointment would be characterized by the thoughts “I felt that I deserved better,” “I thought that the situation was unexpected,” and “I felt that I had missed out on an opportunity”; by the experience “I felt powerless”; by the action tendency “I wanted to do nothing”; by the motivational goals “I wanted to console myself and I wanted to be comforted”; and by the emotion word “I felt disappointment.” We hypothesized that guilt would be characterized by the thoughts “I thought that I had done damage to someone else,” “I thought that I had violated a moral norm,” and “I should have known better”; by the experiences “I felt self-conscious” and “I felt like a bad person”; by the action tendencies “I wanted to apologize to someone” and “I wanted to punish myself”; by the motivational goal “I wanted to be forgiven”; and by the emotion word “I felt guilt.”

To summarize, the goal of the research was to assess the ways in which experiences of regret are universal and the ways in which they vary across cultures. We used an inductive design, wherein participants reported on a personal experience of regret (or disappointment or guilt), which was then rated on a number of emotion components that distinguished regret from other emotions in previous research. We used a stepwise procedure in our analysis. First, at the structural level, we assessed the extent to which the emotion components clustered with one another in a manner that reflects the three emotions in this study (i.e., clusters of regret items, disappointment items, and guilt items), and whether this clustering was similar or different across groups. Second, at the intensity level, we created emotion scales from the items that clustered similarly across cultures and then assessed the extent to which these items were rated differently across the three emotions and cultures. Third, we explored potential cultural differences in

the interpersonal and intrapersonal nature of regret and guilt (see Results section).

Method

Participants

Five hundred fifty-three students participated in this study¹: 143 from Cornell University in the United States (96 females; $M_{\text{age}} = 20.38$, $SD = 4.86$), 147 from Tilburg University in the Netherlands (115 females; $M_{\text{age}} = 19.72$, $SD = 2.17$), 148 from Sapir College in Israel (106 females, one not specified; $M_{\text{age}} = 24.15$, $SD = 2.10$), and 115 from Soochow University in Taiwan (91 females; $M_{\text{age}} = 20.59$, $SD = 1.95$). Participants were randomly assigned to one of three emotion conditions: regret (United States, $n = 46$; Netherlands, $n = 49$; Israel, $n = 43$; Taiwan, $n = 42$), disappointment (United States, $n = 49$; Netherlands, $n = 50$; Israel, $n = 53$; Taiwan, $n = 38$), and guilt (United States, $n = 48$; Netherlands, $n = 49$; Israel, $n = 54$; Taiwan, $n = 35$).

Materials and Procedure

The target emotion was elicited by means of an autobiographical recall procedure (e.g., Zeelenberg & Breugelmans, 2008). Participants reported a personal experience of regret, disappointment, or guilt (between-subjects). They indicated the extent to which they experienced each of 24 emotion components (see the introduction) in the situation on 6-point rating scales, from 0 (*not at all*) to 5 (*very strongly*). Participants completed the instrument for course credit in the United States and the Netherlands. Participation was voluntary and anonymous.

Materials were translated from English by a committee led by the first author in the Netherlands, the fourth author in Taiwan, and by the fifth author in Israel (van de Vijver & Leung, 1997). Regret was translated as *spijt* in Dutch, חרטה in Hebrew, and 後悔 in Mandarin Chinese; disappointment was translated as *teleurstelling* in Dutch, אכזבה in Hebrew, and 失望 in Mandarin; guilt was translated as *schuld* in Dutch, אשמה in Hebrew, and 罪惡感 in Mandarin.²

Results

Structural Analysis

For the analysis of the item structure, both within and between samples, we followed the procedure described by Breugelmans and Poortinga (2006) and Fontaine et al. (2006). The first step of this procedure is done within each sample separately. For each sample, we computed bivariate correlations among all different items (i.e., across participants in all conditions). The correlation

¹ Three other participants with >5% missing values were excluded from the analyses (two from Israel and one from the Netherlands).

² Translation of the emotion words was from English to each of the target languages. Dutch translations were available from previous work by the first and second authors. Translations into Mandarin and Hebrew were led by the fourth and fifth authors, respectively. Dictionary translations were compared with translations by colleagues, students, and—if available—previous papers; any potential issues were discussed with the first author.

coefficients were converted into z scores using Fisher r -to- z transformations. The dimensional structure underlying the items was studied by Multidimensional scaling (PROXCAL procedure in SPSS) on the Euclidean distances among items. This procedure represents the psychological (dis)similarities between items as distances between points in a geometrical space, such that distances between the points represent the observed dissimilarities between the stimuli as well as possible (Borg & Groenen, 1997). A single dimension was sufficient to account for most of the variance in each of the countries in our study (United States: normalized raw stress = .014, Tucker's coefficient of congruence = .99; Netherlands: stress = .014, congruence = .99; Israel: stress = .028, congruence = .97; Taiwan: stress = .006, congruence = .99).

Generalized Procrustes Analysis (GPA; Commandeur, 1991, 1996) was used to examine the extent to which the dimensional structure in each of the countries was similar or different. The fit of a single configuration for the four country-specific multidimensional scaling solutions was excellent (total fit = .95). Fit values larger than .90 are consensually interpreted as indicating that the organization of items along the dimension is equivalent across countries (cf. van de Vijver & Leung, 1997). Thus, the overall structure of the emotion components of regret, disappointment, and guilt can be said to be universal across the four samples in our study.

We also examined the cross-cultural fit of each item separately. This revealed five items with slightly lower fit, indicating some cultural variation (item fit < .80). The GPA program allows for the computation of the positions of these sample-specific items within the universal dimension, so that the direction of cultural differences can be interpreted.

Figure 1 depicts the position of the 19 items in the universal configuration (total fit = .97). Most items clustered as hypothesized: Disappointment items are positioned at the lower end of the dimension, guilt items are positioned at the higher end, and regret items are positioned in between. Only one item did not cluster as hypothesized: "I wanted to punish myself" was closer to the regret items whereas we had expected it to be closer to the guilt items (based on Nelissen, 2012, and Nelissen & Zeelenberg, 2009).

Examining the position of the five of country-specific items within the universal configuration, we found that they varied mainly in terms of the regret and disappointment clusters. "I wanted to kick myself" (item fit = .09) was close to the regret cluster in the Netherlands (position on the GPA dimension = .09), but was less so in Taiwan (.06), the United States (.05), and Israel (−.01). "I wanted to do things differently in the future" (item fit = .14) was close to regret in Israel (.09), but was less so in the United States (.06), the Netherlands (.00), and Taiwan (−.05). "I felt self-conscious" (item fit = .23) was close to regret in Taiwan (.12), but was less so in the Netherlands (.04), Israel (−.01), and the United States (−.02). "I should have known better" (item fit = .45) was close to regret in the United States (.09), but was less so in the Netherlands (.07), Israel (.02), and Taiwan (−.02). "I felt that I had missed out on an opportunity" (item fit = .72) was close to the disappointment cluster in Israel (−.21), the Netherlands (−.21), and the United States (−.17), but was closer to the regret cluster in Taiwan (.02).

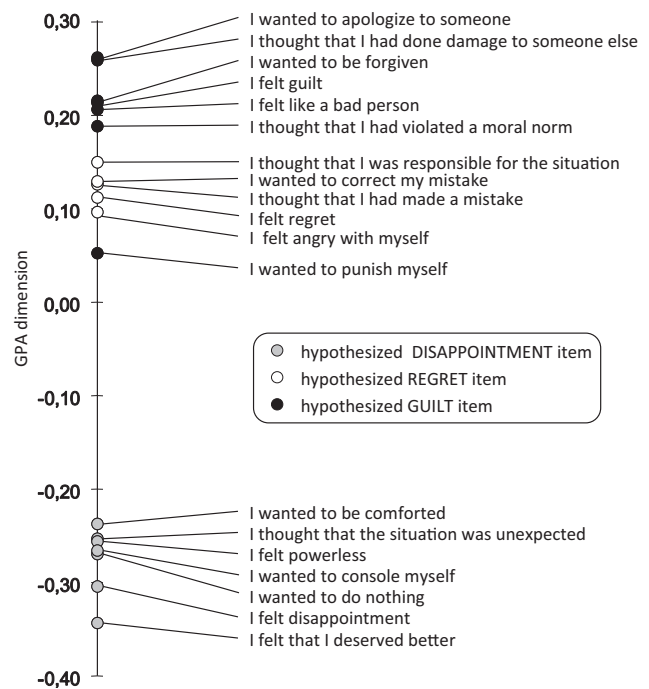


Figure 1. Position of items on a single dimension that was the same across the four country samples (Generalized Procrustes Analysis fit = .97).

Intensity Differences in Regret, Disappointment, and Guilt Scales

On the basis of the 18 items in the universal structure that clustered according to our expectations (i.e., leaving out the item "I wanted to punish myself"), we created scales for regret (five items), disappointment (seven items), and guilt (six items). Across countries, reliabilities were good for the Regret scales (Cronbach's alpha [α] ranging between .80 and .86) and Guilt scales (α between .88 and .90); reliabilities for the Disappointment scale were lower (Israel α = .60; United States α = .68; Taiwan α = .66; Netherlands α = .75), but still acceptable, given the relatively small number of items.

A MANOVA with Country (4) and Emotion (3) as between-subjects factors, and the three Emotion scales as dependent variables, revealed significant main effects for Country, Wilks' λ = .84, $F(9, 1311) = 10.82$, $p < .001$, $\eta_p^2 = .06$, and for Emotion, Wilks' λ = .45, $F(6, 1078) = 87.39$, $p < .001$, $\eta_p^2 = .33$, but no significant interaction, $\lambda = .97$, $F(18, 1525) = 0.97$, $p = .49$, $\eta_p^2 = .01$. The nonsignificance of the Country \times Emotion interaction is especially important in this context because it indicates that emotion profiles are similar across the four countries (see Breugelmans et al., 2005; Scherer & Wallbott, 1994).

The effect of Country was further explored in a series of post hoc tests (Tukey's HSD) with ANOVAs on each of the three Emotion scales. Across the three emotion conditions, there were no differences for the Regret scales (average across all four countries, $M = 3.65$; means and standard deviations for all scales, items, and countries can be found in Table A1 in the Appendix). Taiwanese participants made higher intensity rat-

ings on the Disappointment ($M = 3.44$) and Guilt ($M = 2.80$) scales than participants from other countries (average across the other three countries for disappointment, $M = 2.67$; for guilt, $M = 2.32$).

For the effect of Emotion, post hoc tests confirmed that ratings were higher on the three scales in their respective target conditions. In the regret condition, the Regret scale ratings were significantly higher ($M = 4.10$) than the Disappointment scale ratings ($M = 2.88$), and also higher than the Guilt scale ratings ($M = 3.96$), although this latter difference did not reach statistical significance. In the guilt condition, Guilt scale ratings were higher ($M = 3.60$) than Regret scale ratings ($M = 2.56$), which, in turn, were significantly higher than Disappointment scale ratings ($M = 1.18$). In the disappointment condition, the Disappointment scale ratings were significantly higher ($M = 3.45$) than the Regret scale ratings ($M = 2.71$), which, in turn, were significantly higher than the Guilt scale ratings ($M = 2.44$).

Table 1 displays the mean ratings of each of the items of the three scales across the four countries (i.e., mean scores for each item were averaged across countries; based on means in Table A1 in the Appendix). As can be seen, almost all items scored highest in their respective target conditions; regret items were rated highest in the regret condition, disappointment items in the disappointment condition, and guilt items in the guilt condition. Furthermore, for most items ANOVAs revealed that these differences were also significant within each country. Some exceptions were found in the Disappointment scale, in which, for some items in some

countries, the main effect of emotion was not significant. Note that even in these cases, the mean scores of the item in question were still highest in the target condition.

Exploring Cultural Differences in the Differentiation of Regret and Guilt

The reader will probably have noticed that regret and guilt were more strongly related to one another than to disappointment, both in terms of the closeness of regret and guilt components displayed in Figure 1 and in terms of the intensity ratings displayed in Table 1. This might raise the question to what extent these two emotions are distinct, and if they are, what is responsible for the strong relationship between them. One possible answer to these questions was given in a study by Zeelenberg and Breugelmans (2008), who—with Dutch samples—found that experiences regret and guilt were clearly distinct in situations of intrapersonal harm (e.g., “We feel regret but little guilt over having invested our personal savings in the wrong stocks”), but very similar in situations of interpersonal harm (e.g., “We feel both regret and guilt over having invested the savings of a good friend in the wrong stocks”). In other words, regret was found to be the broader emotion, being elicited by both intrapersonal and interpersonal harm, whereas guilt was mainly restricted to situations of interpersonal harm.

This distinction between intrapersonal and interpersonal situations could be especially informative with respect to the current, cross-cultural study, because the results of previous studies suggest

Table 1
Means Across Four Countries and ANOVA Statistics for the Items of the Regret, Disappointment, and Guilt Scales in Each of the Three Emotion Conditions

Items	Mean ratings across four countries ^a Recalled emotion			ANOVA statistics by country			
	Regret	Disappointment	Guilt	United States $F(2, 140)$	Netherlands $F(2, 145)$	Israel $F(2, 144)$	Taiwan $F(2, 112)$
Regret Scale (average of 5 items)	4.10	2.88	3.96	18.17**	21.14**	10.73**	25.68**
I felt regret	4.55	2.91	3.99	9.23**	38.18**	12.03**	22.31**
I thought that I had made a mistake	4.12	2.83	3.99	11.64**	5.07**	5.29**	30.88**
I wanted to correct my mistake	4.01	2.76	3.99	13.69**	10.68**	6.50**	13.16**
I felt angry with myself	3.91	3.05	3.73	6.58**	7.29**	2.61	3.34*
I thought that I was responsible for the situation	3.89	2.84	4.09	7.54**	15.34**	6.23**	14.28**
Disappointment Scale (average of 7 items)	2.71	3.45	2.44	16.79**	23.16**	20.27**	23.16**
I felt disappointment	3.77	4.52	2.92	5.63**	28.35**	13.48**	26.36**
I felt that I deserved better	2.73	3.87	1.95	39.61**	29.29**	16.68**	3.68*
I thought that the situation was unexpected	3.01	3.70	2.94	1.50	8.75**	1.48	8.98**
I felt powerless	2.99	3.66	2.86	10.62**	7.50**	1.30	4.82*
I wanted to be comforted	2.65	3.36	2.73	3.27*	1.22	4.80*	1.61
I wanted to console myself	2.69	3.11	2.27	3.82*	6.71**	4.57*	0.83
I wanted to do nothing	1.16	1.93	1.40	0.42	3.44*	4.32*	6.93**
Guilt Scale (average of 6 items)	2.45	1.19	3.60	60.13**	34.39**	45.21**	34.39**
I felt guilt	3.36	1.89	4.52	51.20**	34.75**	19.02**	46.53**
I wanted to apologize to someone	2.67	1.03	3.74	30.47**	44.93**	46.59**	11.12**
I thought that I had done damage to someone else	2.37	0.99	3.72	25.39**	36.71**	50.87**	19.15**
I wanted to be forgiven	2.63	1.42	3.59	28.68**	23.63**	24.88**	8.85**
I felt like a bad person	2.25	1.11	3.26	46.01**	6.35**	20.07**	19.78**
I thought that I had violated a moral norm	1.94	0.73	2.78	36.33**	9.01**	9.35**	34.50**

Note. Ratings were made on a 6-point scale from *not at all* (0) to *very strongly* (5). Hypothesized target items are printed in bold.

^a Based on scores printed in Table A1.

* $p < .05$. ** $p < .01$.

that the impact of interpersonal norms on the elicitation of regret is stronger in East Asian samples (Hur et al., 2009). Thus, although our results show that the experiences of regret and guilt are universally distinct (see Figure 1), there may be cultural differences in the elicitation and intensity of regret (and guilt) across interpersonal and intrapersonal situations. Although we did not guide autobiographical recalls toward intrapersonal or interpersonal situations, at the end of the questionnaire, we did ask participants to indicate whether they considered the situation they reported to be more about something that happened to themselves (intrapersonal) or to someone else (interpersonal; forced-choice, two options). Having established universal components of regret and guilt experiences—assuring that ratings of these emotions can be validly compared across cultures—our data allowed us to explore the relationship between these two emotions and intrapersonal and interpersonal situations from a cross-cultural perspective.

The distribution of intrapersonal and interpersonal situations across the regret and guilt conditions in each of the four countries is displayed in Table 2. As can be seen, emotions were clearly distributed differently across interpersonal and intrapersonal situations. In each country except Taiwan, the majority of guilt situations were self-classified as interpersonal. In Taiwan, the distribution was more equal. Even more pronounced differences were found for regret. Whereas in the United States, and to a lesser extent in the Netherlands, regrets tend to be more intrapersonal than interpersonal, in Israel, the distribution was about equal, whereas in Taiwan, regret was much more often interpersonal than intrapersonal.

We further explored cultural differences in the influence of inter- and intrapersonal focus on the intensity of emotion experiences in a repeated measures ANOVA with Country (4) and Focus (2; intrapersonal, interpersonal) as between-subjects factors, and the Emotion scale (2; regret and guilt) as within-subjects factor.³ This yielded a nonsignificant main effect of Country, $F(3, 543) = 1.56, p = .20, \eta_p^2 = .01$, a significant main effect of Focus, $F(1, 543) = 23.72, p < .001, \eta_p^2 = .04$, and a significant main effect of Emotion scale, $F(1, 543) = 551.78, p < .001, \eta_p^2 = .51$. All two-way interactions were significant: Country \times Focus, $F(3, 543) = 3.50, p = .02, \eta_p^2 = .03$; Country \times Emotion Scale, $F(3, 543) = 7.49, p < .001, \eta_p^2 = .04$; Focus \times Emotion Scale, $F(1, 356) = 40.27, p < .001, \eta_p^2 = .07$.

Of main interest for our current question was the significant three-way interaction, $F(3, 543) = 10.94, p < .001, \eta_p^2 = .06$, which reflects the fact that intensity ratings of regret and guilt in situations of interpersonal or intrapersonal focus were not the same across all countries in our sample.⁴ To visualize this interaction, we computed difference scores for ratings of regret and for ratings of guilt, with the ratings in intrapersonal situations subtracted from those in interpersonal situations. Positive scores thus indicate that the emotion was rated higher (more intensely) in interpersonal situations than in intrapersonal situations, and negative scores indicate the reverse. Means of these difference scores are displayed in Figure 2. Three types of patterns can be discerned. First, in the United States, regret was experienced more intensely in intrapersonal than in interpersonal situations, whereas the reverse was true for guilt. Second, both in the Netherlands and in Israel, regret was experienced slightly more intensely in interpersonal situations, but guilt much more intensely. Finally, in Taiwan, both emotions were experienced more intensely in interpersonal situations, with the

difference for regret being even somewhat larger than for guilt. Thus, markedly different cultural patterns can be seen in the relationship between type of harm (intrapersonal or interpersonal) and the frequency and intensity of regret and guilt.

Discussion

Cross-cultural studies of emotion are important for assessing the extent to which psychological knowledge is valid beyond the samples that are typically used in most psychological research conducted in the Western world. For some emotions, like the so-called basic emotions, the issue of cross-cultural generalizability has been addressed extensively. For other emotions like regret, existing knowledge is still very limited. This state of affairs cannot be attributed to the presumed relative importance of these emotions for understanding human behavior—regret is arguably one of the most studied and best modeled emotions across scientific disciplines when it comes to decision making. It can instead be attributed to circumstantial reasons such as the absence of a clearly observable facial expression or psychophysiological profile associated with regret. Existing cross-cultural studies of regret have hitherto focused mainly on the antecedents of regret, not on the nature of the regret experience (see Gilovich et al., 2003; Hur et al., 2009; Komiya et al., 2011). This paper attempts to provide a first assessment of when and how the experience of regret is universal or culturally variable. What have we learned?

First, there is a strong case for the generality (i.e., structural equivalence) of the emotion components that make up experiences of regret, disappointment, and guilt. These components were organized along a single dimension within each country and this organization was found to be the same across countries (see Figure 1). This means that the emotion components that we used in our study had nearly the same psychological meaning in each sample. This validates the creation of the scales used to compare regret, disappointment and guilt across cultures. Furthermore, these findings are in line with cross-cultural studies of other emotions using a similar method (e.g., Breugelmans & Poortinga, 2006; Fontaine et al., 2006).

Analyses at the item level did reveal five items for which some variation could be observed, but these differences were minor. This means that comparison of relations among emotion components met criteria for structural equivalence even when the four items were included. Although structural equivalence is commonly

³ Two participants from the Netherlands and one participant from Israel who did not fill out this question were excluded from the analyses.

⁴ Results of repeated measures ANOVAs within each country with Focus (2) as a between-subject factor and the Emotion scale (2) as a within-subjects factor were United States: Focus, $F(1, 141) = 0.01, p = .95$, Emotion, $F(1, 141) = 154.21, p < .001$, Focus \times Emotion, $F(1, 141) = 9.14, p = .002$; Netherlands: Focus, $F(1, 144) = 10.21, p = .002$, Emotion, $F(1, 144) = 226.84, p < .001$, Focus \times Emotion, $F(1, 144) = 12.80, p < .001$; Israel: Focus, $F(1, 145) = 22.69, p < .001$, Emotion, $F(1, 145) = 164.05, p < .001$, Focus \times Emotion, $F(1, 145) = 53.30, p < .001$; Taiwan: Focus, $F(1, 113) = 5.18, p = .03$, Emotion, $F(1, 113) = 53.45, p < .001$, Focus \times Emotion, $F(1, 113) = 1.15, p = .29$. Results of *t* tests between intrapersonal and interpersonal ratings for each Emotion scale separately within each country were United States: regret, $t(141) = 1.95, p = .05$, guilt, $t(141) = -1.24, p = .22$; Netherlands: regret, $t(144) = -1.24, p = .22$, guilt, $t(144) = -4.62, p < .001$; Israel: regret, $t(145) = -0.58, p = .57$, guilt, $t(141) = -7.50, p < .001$; Taiwan: regret, $t(113) = -2.90, p = .005$, guilt, $t(113) = -1.43, p = .16$.

Table 2

Frequencies (and Associated Chi-Square Statistics) of Regret and Guilt Episodes Self-Classified as Interpersonal and Intrapersonal in Four Countries

Country	Emotion	Self-classification of situation as		Chi-square statistics
		Interpersonal <i>n</i>	Intrapersonal <i>n</i>	
United States	Regret	15	31	$\chi^2(1, N = 94) = 22.73, p < .001$
	Guilt	39	9	
Netherlands	Regret	20	29	$\chi^2(1, N = 96) = 12.64, p < .001$
	Guilt	36	11	
Israel	Regret	21	22	$\chi^2(1, N = 97) = 23.36, p < .001$
	Guilt	50	4	
Taiwan	Regret	34	8	$\chi^2(1, N = 77) = 7.59, p < .01$
	Guilt	18	17	

assessed for groups of items, inspection of individual items can be informative about the potential direction of cross-cultural differences (see Breugelmans & Poortinga, 2006). The differences we observed for the four items with lower individual fit involved being associated less strongly with the targeted cluster in one of the four countries; there were no substantial changes in association (e.g., an item that was associated with guilt in one country but with disappointment in another). Whether these differences are due to translation or to genuine differences in experience cannot be determined on the basis of the current data. Translation seems more likely for the expression “I wanted to kick myself.” Genuine differences seem more likely for the associations in Taiwan between regret and the items “I felt self-conscious” and “I felt that I had missed out on an opportunity.”

Second, the intensity of experienced regret—as measured by participants’ ratings of the emotion components—also showed minimal cross-cultural differences. A bit more pronounced differences in participants’ ratings were obtained on the Guilt and Disappointment scales. These ratings were higher in the Taiwanese sample than the other samples. But here, too, the differences were minor, as was evidenced by the nonsignificant interaction between culture and the Emotion scale. These findings are in line with

cross-cultural studies of other emotions that also found very modest interaction effects (Breugelmans et al., 2005; Scherer & Wallbott, 1994).

However, when looking at different antecedents of these three emotions, substantial cultural variation emerged. Previous research suggested that the crucial distinction between regret and guilt is that the former deals with harm done to oneself (intrapersonal), whereas the latter focuses harm done to someone else (Berndsen et al., 2004). In our U.S. sample, this pattern was, by and large, supported. Most instances of regret were reported in situations that participants themselves categorized as intrapersonal, and most instances of guilt were reported in interpersonal situations. Ratings of regret were also more intense in intrapersonal than in interpersonal situations, and vice versa for guilt. In other samples, however, very different patterns were found. Previous research by Zeelenberg and Breugelmans (2008) found that regret applied equally to situations of intrapersonal and interpersonal harm, whereas guilt applied mainly to the latter. These findings found support in the Dutch and Israeli samples. Among those respondents, regret was experienced about evenly in both types of situations, both in terms of frequency and intensity, whereas guilt was experienced more frequently and intensely in interpersonal situations. Still a different pattern was found in Taiwan, where regret was experienced more frequently and intensely in interpersonal situations.

These differences were not predicted; hence, we can only speculate about precisely what it is about these cultures that produces these differences. The finding that, in Taiwan, regret was most frequently and intensely experienced in interpersonal situations is in line with research showing that East Asian samples focus more on relational antecedents and consequences of emotions (Markus & Kitayama, 1994). More specifically, Komiya et al., (2011) reasoned that a sense of agency and responsibility underlies cultural differences in the intensity of regret experienced in interpersonal situations, and Hur et al., (2009, p. 154) found that “the experience of regret for Koreans but not Americans differed as a function of whether the norm violation took place in an intrapersonal or interpersonal context.” Thus, a general tendency to focus more on other people’s outcomes than on one’s own outcomes among East Asian cultures might explain the Taiwanese findings. Such an explanation seems less applicable to the difference between the United States and the other three countries: This broader cultural difference might explain why Americans’ regrets tend to

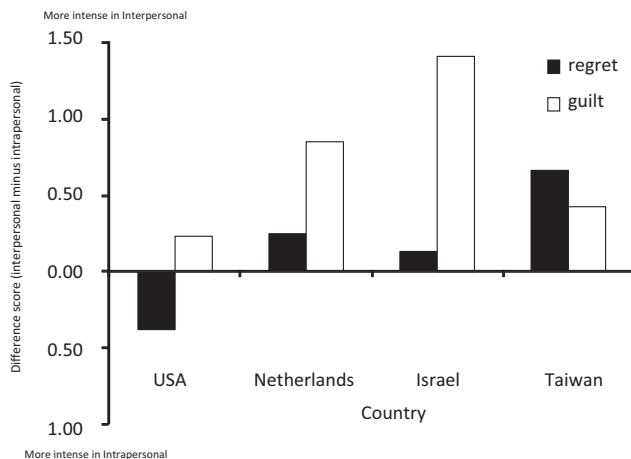


Figure 2. Difference scores for regret and guilt (intensity rating in interpersonal situations minus intensity rating in intrapersonal situations) in four countries.

be more intrapersonal than those of Taiwanese respondents, but it cannot explain the difference with Israeli and Dutch respondents. It is probably best to refrain from venturing any further in the explanation of these (unpredicted) findings until they have been replicated.

Taken together, our study, like almost all cross-cultural research on emotions, provides evidence for both universal and culturally specific elements of regret. Therefore, the most important question is not whether there is cultural variation, but rather where and how such variation can be found (Berry et al., 2011). At a qualitative level, the experience of regret is very similar across cultures. However, when this emotion is experienced (the antecedent) and how strongly it is experienced (the intensity) can vary. In this sense, we have seen at least three cultural models of regret: one in which regret is mainly found in intrapersonal situations (United States); one in which regret is found in both intrapersonal and interpersonal situations (Netherlands, Israel); and one in which regret is mainly found in interpersonal situations (Taiwan). Of course, these findings were the result of an exploratory analysis based on self-assessments by our participants, so some interpretive caution is in order. The evidence for a universal organization of the emotion components that made up our Regret scale, combined with the absence of much cultural variation in the intensity ratings along these components, provide a solid basis for genuine cultural variation in regret in intrapersonal and interpersonal situations. That is, these differences are likely to reflect true cross-cultural variation in the contexts in which regret is experienced and not merely cross-cultural differences in the meaning of regret.

The notable universality of the experience of regret is good news for models of regret-based decision making (e.g., Bell, 1982; Loomes & Sugden, 1982; Zeelenberg & Pieters, 2007) and for applications of regret in actual decision-making situations (e.g., Coricelli et al., 2005; Djulbegovic et al., 1999; Guthrie, 1999; Inman & McAlister, 1994; Maitlis & Ozcelik, 2004). Although our studies do not provide any evidence regarding the cross-cultural generalizability of such models and applications, they do suggest that any ideas about regret-based influences on decision making are more apt to apply to other cultural settings as well. At the same time, our data suggest important cultural differences in the type of contexts in which regret will be most readily experienced. In the United States, for example, regret can be expected to occur more often in situations in which a decision turned out badly for oneself, shifting to guilt whenever another party also suffered negative consequences as a result of one's decisions. In Taiwan, regret and guilt can be expected to co-occur more often because both are felt more intensely in situations of interpersonal harm. Such cultural differences will have to be taken into account when moving from abstract models of regret in decision making toward understanding people's reactions to specific, contextualized decisions.

There are two ancillary benefits of our studies. First is the development of a scale that captures experiences of regret in different cultures. Scales are much better suited for cross-cultural comparisons of emotions than are measures using a single emotion word, because scales are less susceptible to bias (e.g., as a consequence of semantic slippage in translation). The Regret scale that we used could of course be improved, as there may be more emotion components involved in the experience of regret than those we used. For cross-cultural comparative purposes, however, the basic scale that we presented would seem to be a good starting

point. A second advantage is that our studies also shed some light on the universality of disappointment and guilt. Guilt has already been studied extensively across cultures (see Breugelmans & Poortinga, 2006; Fontaine et al., 2006), but as far as we know, there have been no cross-cultural studies of disappointment. Of course, our study was not focused on disappointment, so any future cross-cultural study should probably include more components that are specifically targeted at this emotion. The present data would be a good starting point for designing such a study.

We hasten to note that the sample of countries in our study is of course not representative for the world at large. We used convenience sampling as a way to first test the cross-cultural generality in experiences of regret and related emotions. We believe our data show that it is at least possible to compare such experiences across diverse cultural and linguistic groups. The use of students as respondents has the advantage that the different groups are relatively comparable in terms of their sociodemographic characteristics. An obvious disadvantage is that it is an open question whether findings obtained with such samples generalize to nonuniversity populations in their respective countries. Thus, logical follow-up steps would be to extend this line of research to non-WEIRD (Western, Educated, Industrialized, Rich and Democratic) countries (Henrich et al., 2010) and to participants of a broader range of socioeconomic backgrounds. This has been done successfully in research on the experiences of shame and guilt (Breugelmans & Poortinga, 2006). Based on that research, we expect that studies with broader samples will mostly replicate our findings on the cross-cultural generality of experiences of regret. We are less certain about the replicability of the cultural differences in the interpersonal and intrapersonal orientation of regret and guilt because these were exploratory in nature and not part of our theoretically derived predictions. In either case, follow-up research would be desirable.

In summary, our research assessed the universality and cultural specificity of the experience of regret by asking participants in four cultures (United States, Netherlands, Israel, and Taiwan) to report on their personal experiences of this emotion, and on those of the related emotions of disappointment and guilt. We found that the emotion components of regret, *spijt*, חרטה, and 後悔 are highly similar across cultures. We also found evidence for cross-cultural differences in frequency and intensity of regret in interpersonal and intrapersonal situations. These findings hold promise for the prospects of formulating decision making models of regret that are valid for people across the globe.

References

- Bell, D. E. (1982). Regret in decision making under uncertainty. *Operations Research*, 30, 961–981. <http://dx.doi.org/10.1287/opre.30.5.961>
- Bell, D. E. (1985). Disappointment in decision making under uncertainty. *Operations Research*, 33, 1–27.
- Berndsen, M., van der Pligt, J., Doosje, B., & Manstead, A. S. R. (2004). Guilt and regret: The determining role of interpersonal and intrapersonal harm. *Cognition and Emotion*, 18, 55–70. <http://dx.doi.org/10.1080/02699930244000435>
- Berry, J. W., Poortinga, Y. H., Breugelmans, S. M., Chasiotis, A., & Sam, D. (2011). *Cross-cultural psychology: Theory and applications* (3rd ed.). Cambridge, UK: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511974274>

- Borg, I., & Groenen, P. (1997). *Modern multidimensional scaling: Theory and applications*. New York, NY: Springer. <http://dx.doi.org/10.1007/978-1-4757-2711-1>
- Breugelmans, S. M., & Poortinga, Y. H. (2006). Emotion without a word: Shame and guilt among Rarámuri Indians and rural Javanese. *Journal of Personality and Social Psychology*, 91, 1111–1122. <http://dx.doi.org/10.1037/0022-3514.91.6.1111>
- Breugelmans, S. M., Poortinga, Y. H., Ambadar, Z., Setiadi, B., Vaca, J. B., Widiyanto, P., & Philippot, P. (2005). Body sensations associated with emotions in Rarámuri Indians, rural Javanese, and three student samples. *Emotion*, 5, 166–174. <http://dx.doi.org/10.1037/1528-3542.5.2.166>
- Chen, J., Chiu, C. Y., Roesch, N. J., Tam, K., & Lau, I. Y. (2006). Culture and counterfactuals: On the importance of life domains. *Journal of Cross-Cultural Psychology*, 37, 75–84. <http://dx.doi.org/10.1177/0022022105282296>
- Commandeur, J. (1991). *Matching configurations*. Leiden, Netherlands: DSWO Press.
- Commandeur, J. (1996). *Generalized Procrustes analysis for (in)complete configurations* (Version 2.5) [Computer software]. Leiden, Netherlands: University of Leiden.
- Connolly, T., Ordóñez, L. D., & Coughlan, R. (1997). Regret and responsibility in the evaluation of decision outcomes. *Organizational Behavior and Human Decision Processes*, 70, 73–85. <http://dx.doi.org/10.1006/obhd.1997.2695>
- Connolly, T., & Reb, J. (2005). Regret in cancer-related decisions. *Health Psychology*, 24 (Suppl.), S29–S34. <http://dx.doi.org/10.1037/0278-6133.24.4.S29>
- Coricelli, G., Critchley, H. D., Joffily, M., O'Doherty, J. P., Sirigu, A., & Dolan, R. J. (2005). Regret and its avoidance: A neuroimaging study of choice behavior. *Nature Neuroscience*, 8, 1255–1262. <http://dx.doi.org/10.1038/nn1514>
- Djulgovic, B., Hozo, I., Schwartz, A., & McMasters, K. M. (1999). Acceptable regret in medical decision making. *Medical Hypotheses*, 53, 253–259. <http://dx.doi.org/10.1054/mehy.1998.0020>
- Ekman, P. (1994). Strong evidence for universals in facial expressions: A reply to Russell's mistaken critique. *Psychological Bulletin*, 115, 268–287. <http://dx.doi.org/10.1037/0033-2909.115.2.268>
- Fontaine, J. R. J. (2011). A fourfold conceptual framework for cultural and cross-cultural psychology: Relativism, construct universalism, repertoire universalism and absolutism. In F. J. R. van de Vijver, A. Chasiotis, & S. M. Breugelmans (Eds.), *Fundamental questions in cross-cultural psychology* (pp. 165–189). Cambridge, UK: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511974090.008>
- Fontaine, J. R. J., Luyten, P., De Boeck, P., Corveleyn, J., Fernandez, M., Herrera, D., . . . Tomcsányi, T. (2006). Untying the Gordian knot of guilt and shame: The structure of guilt and shame reactions based on situation and person variation in Belgium, Hungary, and Peru. *Journal of Cross-Cultural Psychology*, 37, 273–292. <http://dx.doi.org/10.1177/0022022105284493>
- Fontaine, J. R. J., Scherer, K. R., Roesch, E. B., & Ellsworth, P. C. (2007). The world of emotions is not two-dimensional. *Psychological Science*, 18, 1050–1057. <http://dx.doi.org/10.1111/j.1467-9280.2007.02024.x>
- Gendron, M., Roberson, D., van der Vyver, J. M., & Barrett, L. F. (2014). Perceptions of emotion from facial expressions are not culturally universal: Evidence from a remote culture. *Emotion*, 14, 251–262. <http://dx.doi.org/10.1037/a0036052>
- Gilovich, T., & Medvec, V. H. (1995). The experience of regret: What, when, and why. *Psychological Review*, 102, 379–395. <http://dx.doi.org/10.1037/0033-295X.102.2.379>
- Gilovich, T., Wang, R. X. F., Regan, D., & Nishina, S. (2003). Regrets of action and inaction across cultures. *Journal of Cross-Cultural Psychology*, 34, 61–71. <http://dx.doi.org/10.1177/0022022102239155>
- Giorgetta, C., Zeelenberg, M., Ferlazzo, F., & D'Olimpio, T. (2012). Cultural variation in the role of responsibility in regret and disappointment: The Italian case. *Journal of Economic Psychology*, 33, 726–737. <http://dx.doi.org/10.1016/j.joep.2012.02.003>
- Guthrie, C. (1999). Better settle than sorry: The regret aversion theory of litigation behavior. *University of Illinois Law Review*, 1999, 43–90.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33, 61–83. <http://dx.doi.org/10.1017/S0140525X0999152X>
- Huang, W.-H., & Zeelenberg, M. (2012). Investor regret: The role of expectation in comparing what is to what might have been. *Judgment and Decision Making*, 7, 441–451.
- Hur, T., Roesch, N. J., & Namkoong, J. E. (2009). Regrets in the East and West: Role of intrapersonal versus interpersonal norms. *Asian Journal of Social Psychology*, 12, 151–156. <http://dx.doi.org/10.1111/j.1467-839X.2009.01275.x>
- Inman, J. J., & McAlister, L. (1994). Do coupon expiration dates affect consumer behavior? *Journal of Marketing Research*, 31, 423–428. <http://dx.doi.org/10.2307/3152229>
- Komiya, A., Miyamoto, Y., Watabe, M., & Kusumi, T. (2011). Cultural grounding of regret: Regret in self and interpersonal contexts. *Cognition and Emotion*, 25, 1121–1130. <http://dx.doi.org/10.1080/02699931.2010.516962>
- Komiya, A., Watabe, M., Miyamoto, Y., & Kusumi, T. (2013). Cultural differences in the action effect. *Social Cognition*, 31, 562–577. <http://dx.doi.org/10.1521/soco.2013.31.5.562>
- Landman, J. (1993). *Regret: The persistence of the possible*. New York, NY: Oxford University Press.
- Lin, C.-H., Huang, W.-H., & Zeelenberg, M. (2006). Multiple reference points in investor regret. *Journal of Economic Psychology*, 27, 781–792. <http://dx.doi.org/10.1016/j.joep.2006.03.004>
- Lonner, W. J. (2011). The continuing challenge of discovering psychological “order” across cultures. In F. J. R. van de Vijver, A. Chasiotis, & S. M. Breugelmans (Eds.), *Fundamental questions in cross-cultural psychology* (pp. 64–94). Cambridge, UK: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511974090.004>
- Loomes, G., & Sugden, R. (1982). Regret theory: An alternative theory of rational choice under uncertainty. *The Economic Journal*, 92, 805–824. <http://dx.doi.org/10.2307/2232669>
- Maitlis, S., & Ozelik, H. (2004). Toxic decision processes: A study of emotion in organizational decision making. *Organization Science*, 15, 375–393. <http://dx.doi.org/10.1287/orsc.1040.0070>
- Markus, H. R., & Kitayama, S. (1994). The cultural construction of self and emotion: Implications for social behavior. In H. R. Markus (Ed.), *Emotion and culture: Empirical studies of mutual influence* (pp. 89–130). Washington, DC: American Psychological Association. <http://dx.doi.org/10.1037/10152-003>
- Mellers, B. A., & McGraw, A. P. (2001). Anticipated emotions as guides to choice. *Current Directions in Psychological Science*, 10, 210–214. <http://dx.doi.org/10.1111/1467-8721.00151>
- Mesquita, B., & Frijda, N. H. (1992). Cultural variations in emotions: A review. *Psychological Bulletin*, 112, 179–204. <http://dx.doi.org/10.1037/0033-2909.112.2.179>
- Mesquita, B., Frijda, N. H., & Scherer, K. R. (1997). Culture and emotion. In P. Dasen & T. S. Saraswathi (Eds.), *Handbook of cross-cultural psychology: Vol. 2. Basic processes and human development* (pp. 255–297). Boston, MA: Allyn & Bacon.
- Nelissen, R. M. A. (2012). Guilt induced self-punishment as a sign of remorse. *Social Psychological and Personality Science*, 3, 139–144. <http://dx.doi.org/10.1177/1948550611411520>
- Nelissen, R. M. A., Breugelmans, S. M., & Zeelenberg, M. (2013). Reappraising the moral nature of emotions in decision making: The case of shame and guilt. *Social and Personality Psychology Compass*, 7, 355–365.

- Nelissen, R. M. A., & Zeelenberg, M. (2009). When guilt evokes self-punishment: Evidence for the existence of a Dobby Effect. *Emotion*, 9, 118–122. <http://dx.doi.org/10.1037/a0014540>
- Ordóñez, L. D., & Connolly, T. (2000). Regret and responsibility: A reply to Zeelenberg et al. (1998). *Organizational Behavior and Human Decision Processes*, 81, 132–142. <http://dx.doi.org/10.1006/obhd.1999.2834>
- Roseman, I. J., Wiest, C., & Swartz, T. S. (1994). Phenomenology, behaviors, and goals differentiate discrete emotions. *Journal of Personality and Social Psychology*, 67, 206–221. <http://dx.doi.org/10.1037/0022-3514.67.2.206>
- Russell, J. A. (1991). Culture and the categorization of emotions. *Psychological Bulletin*, 110, 426–450. <http://dx.doi.org/10.1037/0033-2909.110.3.426>
- Russell, J. A. (1994). Is there universal recognition of emotion from facial expression? A review of the cross-cultural studies. *Psychological Bulletin*, 115, 102–141. <http://dx.doi.org/10.1037/0033-2909.115.1.102>
- Saffrey, C., Summerville, A., & Roese, N. J. (2008). Praise for regret: People value regret above other negative emotions. *Motivation and Emotion*, 32, 46–54. <http://dx.doi.org/10.1007/s11031-008-9082-4>
- Sage, A. P., & White, E. B. (1983). Decision and information structures in regret models of judgment and choice. *IEEE Transactions on Systems, Man, and Cybernetics*, 13, 136–145.
- Savage, L. J. (1951). The theory of statistical decision. *Journal of the American Statistical Association*, 46, 55–67. <http://dx.doi.org/10.1080/01621459.1951.10500768>
- Scherer, K. R., & Wallbott, H. G. (1994). Evidence for universality and cultural variation of differential emotion response patterning. *Journal of Personality and Social Psychology*, 66, 310–328. <http://dx.doi.org/10.1037/0022-3514.66.2.310>
- Semin, G. R., & Zwier, S. (1997). Cultural perspectives on social cognition. In J. W. Berry, Y. H. Portinga, J. Pandey, P. R. Dasen, T. S. Saraswathi, M. H. Segal, & Ç. Kagitçibasi (Eds.), *Handbook of cross-cultural psychology* (Vol. 3, pp. 51–76). New York, NY: Allyn & Bacon.
- Simonson, I. (1992). The influence of anticipating regret and responsibility on purchase decisions. *Journal of Consumer Research*, 19, 105–118. <http://dx.doi.org/10.1086/209290>
- Tymstra, T. (1989). The imperative character of medical technology and the meaning of “anticipated decision regret.” *International Journal of Technology Assessment in Health Care*, 5, 207–213. <http://dx.doi.org/10.1017/S0266462300006437>
- van de Ven, N., Zeelenberg, M., & Pieters, R. (2009). Leveling up and down: The experiences of benign and malicious envy. *Emotion*, 9, 419–429. <http://dx.doi.org/10.1037/a0015669>
- van de Vijver, F. J. R., & Leung, K. (1997). *Methods and data analysis for cross-cultural research*. Newbury Park, CA: Sage.
- van Hemert, D. A., Poortinga, Y. H., & van de Vijver, F. J. R. (2007). Emotion and culture. A meta-analysis. *Cognition and Emotion*, 21, 913–943. <http://dx.doi.org/10.1080/02699930701339293>
- Zeelenberg, M., Beattie, J., van der Pligt, J., & De Vries, N. K. (1996). Consequences of regret aversion: Effects of expected feedback on risky decision making. *Organizational Behavior and Human Decision Processes*, 65, 148–158. <http://dx.doi.org/10.1006/obhd.1996.0013>
- Zeelenberg, M., & Breugelmans, S. M. (2008). The role of interpersonal harm in distinguishing regret from guilt. *Emotion*, 8, 589–596. <http://dx.doi.org/10.1037/a0012894>
- Zeelenberg, M., & Pieters, R. (2007). A theory of regret regulation 1.0. *Journal of Consumer Psychology*, 17, 3–18. http://dx.doi.org/10.1207/s15327663jcp1701_3
- Zeelenberg, M., van Dijk, W. W., & Manstead, A. S. R. (1998). Reconsidering the relation between regret and responsibility. *Organizational Behavior and Human Decision Processes*, 74, 254–272. <http://dx.doi.org/10.1006/obhd.1998.2780>
- Zeelenberg, M., van Dijk, W. W., Manstead, A. S. R., & Van der Pligt, J. (1998). The experience of regret and disappointment. *Cognition and Emotion*, 12, 221–230. <http://dx.doi.org/10.1006/obhd.1998.2784>
- Zeelenberg, M., van Dijk, W. W., & Manstead, A. S. R. (2000). Regret and responsibility resolved? Evaluating Ordóñez and Connolly's (2000) conclusions. *Organizational Behavior and Human Decision Processes*, 81, 143–154. <http://dx.doi.org/10.1006/obhd.1999.2865>
- Zeelenberg, M., van Dijk, W. W., Manstead, A. S. R., & van der Pligt, J. (2000). On bad decisions and disconfirmed expectancies: The psychology of regret and disappointment. *Cognition and Emotion*, 14, 521–541. <http://dx.doi.org/10.1080/026999300402781>
- Zhang, J. H., Walsh, C., & Bonnefon, J. F. (2005). Between-subject or within-subject measures of regret: Dilemma and solution. *Journal of Experimental Social Psychology*, 41, 559–566. <http://dx.doi.org/10.1016/j.jesp.2004.10.004>

Appendix

Descriptive Item Statistics

Table A1
Means and Standard Deviations of Regret, Disappointment, and Guilt Items for Each Emotion Condition in the United States, the Netherlands, Israel, and Taiwan

Items of the three emotion scales	Recalled emotion					
	Regret		Disappointment		Guilt	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Country: United States						
Regret Scale	4.11	0.84	2.94	1.20	3.93	1.01
I felt regret	4.52	0.66	3.61	1.37	4.08	0.92
I thought that I had made a mistake	4.28	1.17	2.89	1.85	4.00	1.37
I wanted to correct my mistake	3.98	1.29	2.45	1.94	3.88	1.50
I felt angry with myself	3.89	1.35	2.88	1.63	3.75	1.45
I thought that I was responsible for the situation	3.89	1.39	2.86	1.79	3.96	1.47
Disappointment Scale	2.57	0.89	3.13	0.82	2.09	0.94
I felt disappointment	3.93	1.37	3.97	0.54	3.15	1.84
I felt that I deserved better	2.70	1.71	3.98	1.27	1.27	1.51
I thought that the situation was unexpected	2.87	1.72	3.33	1.31	2.83	1.63
I felt powerless	3.17	1.61	3.57	1.55	2.04	1.89
I wanted to be comforted	2.15	1.86	3.06	1.74	2.35	1.88
I wanted to console myself	2.11	1.42	2.67	1.64	1.81	1.61
I wanted to do nothing	1.04	1.41	1.33	1.66	1.21	1.46
Guilt Scale	2.48	1.51	0.84	1.07	3.66	0.96
I felt guilt	3.26	1.90	1.56	1.56	4.54	0.62
I wanted to apologize to someone	2.65	2.10	0.88	1.60	3.65	1.58
I thought that I had done damage to someone else	2.20	2.09	0.84	1.59	3.46	1.74
I wanted to be forgiven	2.35	2.06	0.76	1.51	3.40	1.59
I felt like a bad person	2.59	2.09	0.82	1.27	3.96	1.40
I thought that I had violated a moral norm	1.83	1.88	0.22	0.59	2.94	1.92
Country: Netherlands						
Regret Scale	4.18	0.74	3.01	1.35	4.08	0.75
I felt regret	4.71	0.79	2.64	1.68	4.12	0.99
I thought that I had made a mistake	4.04	1.10	3.22	1.64	3.89	1.30
I wanted to correct my mistake	4.02	0.99	3.04	1.87	4.20	0.94
I felt angry with myself	4.02	1.05	3.04	1.62	3.77	1.25
I thought that I was responsible for the situation	4.08	1.06	3.12	1.66	4.42	0.71
Disappointment Scale	2.32	0.97	3.35	0.66	2.34	0.92
I felt disappointment	3.37	1.69	4.82	0.39	2.71	1.78
I felt that I deserved better	2.08	1.64	3.90	1.22	1.73	1.65
I thought that the situation was unexpected	2.55	1.53	3.72	1.23	3.11	1.40
I felt powerless	2.37	1.62	3.52	1.33	3.17	1.59
I wanted to be comforted	2.94	1.59	3.36	1.44	2.94	1.65
I wanted to console myself	2.08	1.53	2.62	1.52	1.56	1.23
I wanted to do nothing	0.88	1.09	1.54	1.37	1.19	1.29
Guilt Scale	2.43	1.43	1.26	0.90	3.33	0.95
I felt guilt	3.71	1.62	2.38	1.59	4.64	0.59
I wanted to apologize to someone	2.39	2.03	0.62	0.92	3.56	1.52
I thought that I had done damage to someone else	2.08	1.93	0.96	1.11	3.60	1.46
I wanted to be forgiven	2.43	1.81	1.34	1.51	3.50	1.33
I felt like a bad person	1.90	1.73	1.26	1.34	2.37	1.58
I thought that I had violated a moral norm	2.08	1.90	1.02	1.22	2.30	1.64
Country: Israel						
Regret Scale	3.97	1.05	2.93	1.32	3.74	1.12
I felt regret	4.33	1.08	2.82	1.87	3.70	1.42
I thought that I had made a mistake	3.81	1.55	2.83	1.90	3.69	1.46
I wanted to correct my mistake	4.23	1.27	3.06	1.88	3.78	1.60
I felt angry with myself	3.70	1.60	3.04	1.73	3.65	1.53
I thought that I was responsible for the situation	3.77	1.52	2.91	1.67	3.89	1.45

(Appendix continues)

Table A1 (*continued*)

Items of the three emotion scales	Recalled emotion					
	Regret		Disappointment		Guilt	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Disappointment Scale	2.60	0.84	3.33	0.75	2.33	0.91
I felt disappointment	3.88	1.38	4.56	1.09	3.06	1.88
I felt that I deserved better	2.58	1.89	3.79	1.41	1.87	1.89
I thought that the situation was unexpected	3.12	1.59	3.60	1.52	3.13	1.77
I felt powerless	2.53	1.84	3.06	1.67	2.65	1.62
I wanted to be comforted	2.16	1.93	3.13	1.72	2.13	1.92
I wanted to console myself	3.02	1.75	3.43	1.53	2.41	1.99
I wanted to do nothing	0.93	1.35	1.75	1.75	1.06	1.37
Guilt Scale	2.39	1.47	1.09	1.19	3.43	0.97
I felt guilt	3.37	1.76	2.32	2.04	4.30	1.06
I wanted to apologize to someone	2.60	2.24	0.81	1.53	4.01	1.38
I thought that I had done damage to someone else	2.26	2.01	0.74	1.46	3.91	1.43
I wanted to be forgiven	2.37	1.99	1.14	1.67	3.57	1.72
I felt like a bad person	1.74	1.80	0.68	1.27	2.61	1.66
I thought that I had violated a moral norm	2.00	1.85	0.87	1.29	2.17	1.84
Country: Taiwan						
Regret Scale	4.12	0.73	2.63	1.41	4.07	0.87
I felt regret	4.64	0.73	2.58	2.06	4.06	1.14
I thought that I had made a mistake	4.36	0.93	2.39	1.73	4.37	0.97
I wanted to correct my mistake	3.79	1.39	2.47	1.83	4.11	1.05
I felt angry with myself	4.02	1.02	3.24	1.68	3.74	1.36
I thought that I was responsible for the situation	3.81	1.33	2.45	1.74	4.09	1.12
Disappointment Scale	3.35	0.76	3.98	0.67	2.98	0.80
I felt disappointment	3.88	1.31	4.74	0.50	2.74	1.48
I felt that I deserved better	3.55	1.35	3.79	1.32	2.91	1.60
I thought that the situation was unexpected	3.48	1.50	4.13	1.19	2.69	1.66
I felt powerless	3.90	1.36	4.50	1.01	3.57	1.50
I wanted to be comforted	3.33	1.57	3.89	1.41	3.51	1.22
I wanted to console myself	3.55	1.25	3.71	1.52	3.31	1.13
I wanted to do nothing	1.79	1.55	3.11	1.74	2.14	1.57
Guilt scale	2.84	1.40	1.57	1.32	3.99	0.84
I felt guilt	3.10	1.68	1.29	1.77	4.60	0.55
I wanted to apologize to someone	3.02	2.04	1.79	1.77	3.74	1.48
I thought that I had done damage to someone else	2.93	1.98	1.42	1.69	3.91	1.46
I wanted to be forgiven	3.36	1.50	2.42	1.81	3.89	1.13
I felt like a bad person	2.76	1.85	1.66	1.79	4.11	1.25
I thought that I had violated a moral norm	1.86	1.75	0.82	1.27	3.69	1.37

Received February 27, 2013

Revision received April 17, 2014

Accepted April 21, 2014 ■