Psychology & Health

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/gpsh20

The effects of culture and self-construal on responses to threatening health information

Jill A. Jacobson a, Li-Jun Ji a, Peter H. Ditto b, Zhiyong Zhang c, Dara H. Sorkin d, Sarah K. Warren e, Veronica Legnini f, Anna Ebel-Lam a & Sarah Roper-Coleman b

a Department of Psychology, Queen's University, 62 Arch Street, Kingston, ON K7L 3N6, Canada
b Department of Psychology and Social Behavior, University of California at Irvine, Irvine, CA, USA
c Department of Psychology, Beijing University, Beijing, China
d Health Policy Research Institute, University of California, Irvine, CA, USA
e Bloorview Kids Rehab, Toronto, ON, Canada
f Department of Family Medicine, Queen's University, Kingston, ON K7L 3N6, Canada

Version of record first published: 30 Jan 2012

To cite this article: Jill A. Jacobson, Li-Jun Ji, Peter H. Ditto, Zhiyong Zhang, Dara H. Sorkin, Sarah K. Warren, Veronica Legnini, Anna Ebel-Lam & Sarah Roper-Coleman (2012): The effects of culture and self-construal on responses to threatening health information, Psychology & Health, 27:10, 1194-1210

To link to this article: http://dx.doi.org/10.1080/08870446.2011.652963
The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae, and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.
The effects of culture and self-construal on responses to threatening health information


Department of Psychology, Queen's University, 62 Arch Street, Kingston, ON K7L 3N6, Canada; Department of Psychology and Social Behavior, University of California at Irvine, Irvine, CA, USA; Department of Psychology, Beijing University, Beijing, China; Health Policy Research Institute, University of California, Irvine, CA, USA; Bloorview Kids Rehab, Toronto, ON, Canada; Department of Family Medicine, Queen's University, Kingston, ON K7L 3N6, Canada

(Received 7 February 2011; final version received 21 December 2011)

Objective: The current studies examined if cultural and self-construal differences in self-enhancement extended to defensive responses to health threats.

Design: Responses to fictitious medical diagnoses were compared between Asian-Americans and European-North Americans in Experiment 1 and between Canadians primed with an interdependent versus an independent self-construal in Experiment 3. In Experiment 2, the responses of Chinese and Canadians who were either heavy or light soft drink consumers were assessed after reading an article linking soft drink consumption to insulin resistance.

Main outcome measure: The primary-dependent measure reflected participants’ defensiveness about threatening versus nonthreatening health information.

Results: In Experiment 1, all participants responded more defensively to an unfavourable than a favourable diagnosis; however, Asian-Americans responded less defensively than did European-North Americans. In Experiment 2, all high soft drink consumers were less convinced by the threatening information than were low soft drink consumers; however, among high consumers, Chinese changed their self-reported consumption levels less than did European-Canadians. In Experiment 3, interdependence-primed participants responded less defensively to an unfavourable diagnosis than did independence-primed participants.

Conclusion: Defensive reactions to threatening health information were found consistently; however, self-enhancement was more pronounced in individuals with Western cultural backgrounds or independent self-construals.

Keywords: responses to health threats; culture; self-construal; self-enhancement

*Corresponding author. Email: jill.jacobson@queensu.ca

ISSN 0887–0446 print/ISSN 1476–8321 online
© 2012 Taylor & Francis
http://dx.doi.org/10.1080/08870446.2011.652963
http://www.tandfonline.com
Introduction

Much cross-cultural research in psychology has focused on the presence or absence of self-enhancing biases in Eastern versus Western societies (for a review, see Heine, Lehman, Markus, & Kitayama, 1999). In this research, East Asians often are described as self-critical or self-effacing; whereas North Americans are characterised as self-enhancing (but for a different perspective, see Brown & Kobayashi, 2003; Sedikides, Gaertner, & Vevea, 2005; et al.).

The explanations for these cultural differences have focused on collectivism versus individualism in East Asia versus North America or the corresponding ideas of interdependent versus independent self-construals (Heine et al., 1999). More specifically, Eastern cultures tend to be collectivist in orientation, where the common good and group harmony are focal concerns, and the self is conceived of as connected with, rather than distinct from, others (Heine, 2001; Markus & Kitayama, 1991). Consequently, behaviours and beliefs that emphasise the individual, especially the superiority of the individual over other group members, are not conducive to these goals (Heine et al., 2001; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). Instead, attending to ways one is failing to attain the shared ideals of the group are encouraged and rewarded because such actions indicate one is engaged in the group and working toward its goals (Heine et al., 1999, 2001). Western culture, on the other hand, tends to be relatively individualist in orientation, with a focus on the self as independent and distinct from others (Heine, 2001; Markus & Kitayama, 1991). Behaviours and beliefs that emphasise the individual, especially the individual’s superiority over others, are conducive to this goal and are encouraged and rewarded (Heine et al., 2001; Kitayama et al., 1997).

In cross-cultural studies of self-enhancement biases, health perceptions have received comparatively less attention than the ability and performance judgements, and studies that have included health factors have missed opportunities to provide useful information on this topic. For example, Kurman (2001) included health as an agentic trait in her study, but it was collapsed into an index with the other traits. Consequently, any findings specific to health were not presented. Similarly, Heine and Lehman’s (1995) health-related events in their unrealistic optimism measures were reported aggregated across items.

One particular type of health judgement that is worthy of investigation is people’s responses to negative health information. Two decades of research consistently has shown that North American participants react to unfavourable medical information in a defensive manner by downplaying the seriousness of the diagnosed condition and derogating the accuracy of the diagnostic test or source of the medical information (e.g. Ditto & Lopez, 1992; Ditto, Seepansky, Munro, Apanovitch, & Lockhart, 1998; Jemmott, Ditto, & Croyle, 1986; Kunda, 1987). Unfortunately, the cross-cultural generalisability of these responses to health risk information has not been tested directly.

Although a great deal of evidence suggests that East Asians do not show self-enhancement biases (cf. Heine et al., 1999), health might be a special domain. That is, as we have already mentioned, most cross-cultural studies on self-enhancement biases have focused on achievement or other social feedback, but these domains may be more susceptible to cultural training. Threats to health, in contrast, are more existential and might be equally threatening to everyone and thus equally likely to evoke defensiveness in individuals with either independent or interdependent...
self-construals. Indeed, in Heine and Hamamura’s (2007) meta-analysis, the only study that showed East Asians to self-enhance significantly more than Westerners was Ji, Zhang, Usborne, and Guan’s (2004) study on the perceived likelihood of contracting a particular disease, severe acute respiratory syndrome. The latter results indicate that health judgements may be a particularly important area for investigations into cross-cultural differences, particularly those concerning self-enhancement biases.

Thus perhaps not surprisingly, cultural differences in responses to persuasive health messages have been garnering attention for many years (see Sherman, Uuskul, & Updegraff, 2011, for a review). Of particular relevance to the current research, Ko and Kim (2010) recently hypothesised that health messages that focus on personal risk are more threatening to one’s personal self. Consequently, people from cultures where the personal self is primary (e.g. European-Americans) should be less persuaded by messages with personal than with relational frames, but such frames would not differentially affect people from cultures where the personal self is not focal (e.g. Asian-Americans).

Thus in their only study that included both Asian-Americans and European-Americans, Ko and Kim (2010, Study 1) expected to find a significant difference between the two frames for European-Americans but not for Asian-Americans. Contrary to their hypotheses, the difference between the frames was not statistically significant within either cultural group, but the pattern of means was in the expected direction for the European-Americans (i.e. they had slightly more favourable responses to the relational- than the personal-risk framed brochure). Although Ko and Kim did not report the statistical results for comparisons between cultures, which is understandable because their hypothesis pertained to within-culture differences, European-Americans tended to rate the relational-risk framed message slightly higher than did Asian-Americans, but they tended to rate the personal-risk framed message slightly lower than did Asian-Americans. We are cautious about drawing conclusions from nonsignificant results, but Ko and Kim’s study may provide some evidence that Asian-Americans can exhibit some defensiveness in response to health messages at least in certain contexts.

The present research

The current set of studies was designed to directly examine whether or not cross-cultural self-enhancement differences would extend to feedback about one’s health. To this aim, we used two well-established experimental methods to test responses to risk factor information: Croyle and Ditto’s (1990) (see also Ditto & Croyle, 1995) diagnosis paradigm in Experiments 1 and 3 and, in Experiment 2, the medical article paradigm used by Kunda (1987, Study 3) and Liberman and Chaiken (1992) among others.

Experiment 1: Asian-American versus European-North American diagnosis responses

In the first study, we used Croyle and Ditto’s (1990) diagnosis manipulation to test whether or not Asian-Americans and European-North Americans differed in their responses to favourable versus unfavourable health feedback. This procedure
employs temporary deception to recreate a risk factor screening situation and randomly assign individuals to receive either favourable or unfavourable test results. Because risk factor information is typically communicated to individuals who are asymptomatic, healthy populations (e.g. college undergraduates) can be used as participants. Consequently, this experimental paradigm allows one to study reactions to risk factor information in a situation that is (a) highly controlled and thus internally valid, (b) highly involving and thus externally valid and (c) minimally harmful and thus ethically sensitive (Croyle & Ditto, 1990).

Method
The procedure used in this study has been presented in detail elsewhere (e.g. Ditto & Lopez, 1992; Jemmott et al., 1986). For an extensive discussion of the paradigm, including an analysis of its internal and external validity, see either Croyle and Ditto (1990) or Ditto and Croyle (1995).

Participants and exclusion criteria
For course credit, 121 students participated in this study. Before being exposed to the diagnosis manipulation, participants completed a questionnaire intended to identify for immediate exclusion participants who were diabetic or hypoglycemic, a precaution due to the use of dextrose in the manipulation. No participants were excluded for this reason. Individuals with hypochondriacal tendencies were identified using the Whitely Index (Pilowsky, 1967), which was also included in the initial questionnaire. This scale consists of 14 questions (e.g. “Do you often worry about the possibility that you have got a serious illness?”) with the response options yes (1) or no (0). Eleven participants were excluded prior to the diagnosis manipulation for scoring eight or higher on this scale. In addition, the results from eight participants were not analysed due to procedural problems (i.e. their test strips did not change colour – see below), and the results from four others were excluded because they expressed suspicion about the experimental manipulation. As a result, the final analyses were conducted using 98 participants consisting of 67 Asian-American students (56 women and 11 men) enrolled at the University of California at Irvine and 31 European-North Americans (24 women and seven men) from the University of California at Irvine (n = 18) and from Queen’s University in Kingston, Ontario (n = 13).

Procedure
Upon arrival, participants learned that they would be completing various questionnaires and medical tests. They first completed a health background questionnaire intended to identify participants who needed to be excluded before the diagnosis manipulation as discussed above. To enhance the cover story, participants next took a blood pressure test and completed a Test Result Report form. The experimenter informed the participants that they would be given a similar questionnaire after each medical test.

After they finished with the blood pressure questionnaire, participants completed several personality measures before being introduced to a fictitious medical condition. Participants were told that approximately one in five (20%) people
possessed an enzyme called thioamine acetylase (TAA). Half of the participants further learned that possessing TAA makes people relatively susceptible to mild-pancreatic disorders later in life (unfavourable diagnosis condition). The other half, in contrast, learned that TAA-positivity makes them relatively immune to future mild-pancreatic disorders (favourable diagnosis condition). All participants learned that if their TAA test strip turned brown, they were diagnosed as having the TAA enzyme.

To test for TAA, participants rinsed with mouthwash, ostensibly to cleanse their mouths before the test. Then they placed a saliva sample in a plastic cup and immersed a TAA test strip into their saliva. The test strip was actually a common urinary glucose test strip, and because a small amount of dextrose was placed in the mouthwash, all test strips turned from green to brown when placed in the saliva. Hence, all participants learned that they were TAA-positive, and only the implications of TAA-positivity (whether it was favourable or unfavourable) were manipulated.

After being diagnosed as TAA-positive, participants completed the Test Result Report form. Two items from this questionnaire served as the primary assessment of defensiveness: ‘How confident are you that this test is an accurate indication of your actual TAA status?’ and ‘If you were to take a TAA test again in the future, how likely do you think it is that it would give you a similar result?’ These questions were answered on nine-point scales (1 = not at all confident/very unlikely, 9 = very confident/very likely). A defensiveness dependent measure was constructed by averaging responses to the two questions (r = 0.82, p < 0.001). Higher ratings on this index indicated less defensiveness about or greater acceptance of the TAA diagnosis. Immediately after the TAA Test Result Report form was completed, participants were thoroughly debriefed using procedures suggested by Ross, Lepper, and Hubbard (1975) to dispel any lasting effects of experimental manipulations and to determine levels of suspiciousness.

Results and discussion
The defensiveness index was analysed using a 2 (culture: Asian-American vs. European-North American) × 2 (diagnosis: favourable vs. unfavourable) analysis of variance (ANOVA). Consistent with a wealth of past research, participants in the unfavourable diagnosis condition were significantly more defensive than the participants in the favourable diagnosis condition; that is, participants who were led to believe that TAA positivity had unfavourable medical implications (M = 5.53, SD = 1.75) rated the diagnostic test as significantly less valid than did participants who believed TAA positivity to have favourable health implications (M = 7.54, SD = 1.46), F(1, 94) = 43.71, p < 0.001 and partial η² = 0.32. However, this main effect was qualified by the predicted culture × diagnosis interaction, F(1, 94) = 4.04, p < 0.05 and partial η² = 0.04.

To interpret this interaction, pair-wise comparisons were conducted (see Figure 1 for the means). Both Asian-American and European-North American participants were significantly more defensive in the unfavourable compared to the favourable diagnosis condition, ts(94) = 5.21 and 4.09, respectively, ps < 0.001. However, within the unfavourable diagnosis condition, Asian-Americans (M = 5.89, SD = 1.78) were significantly more accepting of the results than European-North Americans (M = 4.73, SD = 1.44), t(94) = 2.36, p < 0.02. Asian-Americans (M = 7.47,
SD = 1.48) and European-North Americans (M = 7.69, SD = 1.44) did not differ in the favourable diagnosis condition, t(94) = 0.45, p > 0.64.2

In sum, both Asian-Americans and European-North Americans exhibited greater defensiveness in response to an unfavourable than a favourable medical diagnosis. Hence, support for some level of universality of defensive responses to negative health feedback was obtained (cf. Norenzayan & Heine, 2005). However, Asian-Americans were significantly less defensive than European-North Americans in the unfavourable diagnosis condition. Thus both groups self-enhanced, but the bias was weaker among Asian-Americans.

Experiment 2: Chinese versus European-Canadian responses to health messages

One potential problem with Experiment 1 is that our Asian participants were bicultural (i.e. they were of Asian-descent but lived in the United States), and thus their responses may have been more similar to the European-North Americans because of their assimilation to Western-cultural traits and values. Indeed, in Heine and Hamamura's (2007) review, they found that Asian-Americans tend to fall somewhere in between East Asian and Western participants in their self-enhancing responses. In other words, Asian-Americans would be expected to be defensive but not as defensive as European-North Americans just as we found.

To explore this explanation, the second experiment was conducted with two comparatively monocultural samples, Chinese living in China and European-Canadians living in Canada. Consistent with Heine and his colleagues' (Heine, Lehman, Peng, & Greenholtz, 2002; Norenzayan & Heine, 2005) recommendation for conducting cross-cultural research, we also used a different methodology to further test the generalisability of our results.
More specifically, we adapted a procedure developed by Kunda (1987, Study 3; see also Lieberman & Chaiken, 1992; Sherman, Nelson, & Steele, 2000, Study 1) to examine cultural differences in responses to health feedback. In Kunda’s study, women and men who either drank a lot of or very little coffee read an article that linked caffeine consumption to fibrocystic disease, a condition associated with later breast cancer. For women who rarely drank coffee and for men regardless of their caffeine consumption levels, this message should be less personally relevant and therefore less threatening because the research discussed did not link the women’s behaviour to the disease and because the risk of breast cancer is minimal for men. However, women who drank a lot of coffee should be personally threatened by this information and thus more likely to process it defensively. Indeed, Kunda found that although women who drank a lot of coffee thought they were more likely to develop fibrocystic disease than the others did, they were also less convinced that caffeine consumption was linked to the disease.

Recently, Uskul and Oyserman (2010) used this same procedure to examine the persuasiveness of health messages as a function of self-construal priming (independent vs. interdependent) and message frame (individual vs. relational consequences) in two separate female cultural samples (European-Americans in Study 1 and Asian-Americans in Study 2) that were not statistically compared. They concluded that people who are primed with their culturally predominant self-construal are more persuaded by messages that emphasise the consequences that are more relevant to their culturally predominant self-construal. Although Uskul and Oyserman’s goals differed from ours in that they were interested in persuasiveness, their acceptance measure is conceptually similar to our construct of defensiveness.

In our second study, we attempted to extend Uskul and Oyserman’s (2010) approach and our Study 1 in a number of ways to more directly address our research question about cultural differences in defensive responses to health messages. First, to rule out a bicultural explanation, our Western cultural group consisted only of European-North Americans living in Canada, and our Eastern cultural group was comprised of Chinese living in China. Second, because coffee consumption is quite rare in East Asia, particularly China where our collectivist cultural participants were recruited, we chose another beverage and disorder to present in the message. Our Chinese colleagues identified that soft drink consumption was on the rise among their students and that Chinese were increasingly concerned about diabetes. Thus our article linked soft drink consumption to insulin resistance, a precursor to diabetes. Third, Uskul and Oyserman (2010) included only women and only high-coffeine consumers in their studies. The sample for our second study consisted of both men and women, and we felt it was important for addressing our research question to include both high and low soft drink consumers.

In Experiment 2, we also decided to add a second measure of defensiveness, self-reported soft drink consumption. A number of cross-cultural researchers have identified problems with using subjective scales like our defensiveness index (e.g. Chen, Lee, & Stevenson, 1995; Heine et al., 2002). Heine et al. (2002), for example, argued that when selecting their responses on subjective scales, participants in different cultures compare themselves to different standards, and if these standards represent different norms, then cultural comparisons will be confounded. They concluded that fewer differences between cultures will be observed on subjective scales than with more objective measures. Thus Heine et al. recommended the use of measures that tap concrete behaviours like how frequently some action has occurred
in a given period of time as less likely to be affected by different reference groups because social comparison is not involved in these reports.

Based on the results of Experiment 1, we expected that both Chinese and Canadians would be less convinced by the medical information if they were high rather than low soft drink consumers, and overall Chinese should be less defensive in their responses than the European-Canadians. This pattern, however, may emerge only for the frequency measure (soft drink consumption), which should be more valid cross-culturally and cross-nationally than our scaled measure (defensiveness index), according to Heine et al. (2002), due to potential reference group differences on the latter.

Method

Participants

Eighty-nine Chinese students (51 women, 36 men and two unknown) from Beijing University and 92 European-Canadian students (73 women and 19 men) from Queen’s University participated in this study. The Chinese students were given a small gift and the Canadian students received 0.5% towards their introductory psychology mark.

All students were screened at the beginning of the year on a variety of items including their levels of soft drink consumption, which we converted to a common metric of the number of cans of soft drinks consumed each week. The mean of each sample’s responses was used in the article that the participants read for this study, so that reasonable quantities were selected in each country. Within each sample, this information also was used to form the low- and high-consumption groups. Specifically, the two groups were comprised of participants whose consumption rates were in the top or bottom 20% of all prescreened individuals within each country. For Chinese, the low-consumption group \((n = 46)\) drank a quarter of a can or less per week \((M = 0.18, SD = 0.11)\); whereas the high-consumption group \((n = 43)\) drank three and a half cans or more per week \((M = 5.48, SD = 2.77)\). For Canadians, the low-consumption group \((n = 50)\) drank one can or less per week \((M = 0.23, SD = 0.24)\) and the high-consumption group \((n = 42)\) drank five cans or more per week \((M = 11.04, SD = 7.02)\).

Procedure

The procedure was adapted from Kunda (1987, Study 3). Participants read an article, ostensibly from a respected medical journal, reporting research results that high levels of dietary sugar are linked to the development of insulin resistance and, in some cases, diabetes mellitus. The development of insulin resistance was described as being especially likely among young adults who are heavy consumers of soft drinks. Several studies were cited mostly in support of, but a few in opposition to, the claim that a high level of soft drink consumption significantly increased the likelihood of insulin resistance. The article concluded with the advice that although insulin resistance is not a very serious condition on its own, young adults should eliminate soft drinks entirely from their diet because of insulin resistance’s connection to diabetes mellitus.

After they finished reading, participants completed a questionnaire about the article. Two items served as the primary assessment of defensiveness: ‘To what extent
do you agree with the statement: “Soft drink consumption is strongly associated with insulin resistance”’ and ‘How convinced are you of the connection between soft drink and insulin resistance?’ These questions were answered on nine-point scales (1 = strongly disagree/not at all confident, 9 = strongly agree/very confident) and a defensiveness index that was conceptually similar to the one used in Experiment 1 was constructed by averaging responses to the two questions ($r = 0.68$, $p < 0.001$). As another measure of defensiveness, participants also reported their own soft drink consumption level again to determine if they changed their self-reports after reading the information.

Results and discussion
The defensiveness index was analysed using a 2 (culture: Chinese vs. European-Canadian) × 2 (level of consumption: high vs. low) ANOVA. Replicating Kunda (1987), overall the high-consumption group was less persuaded by the information presented in the article ($M = 5.59$, SD = 1.43) than the low-consumption group ($M = 5.99$, SD = 1.34), $F(3, 177) = 3.84$, $p < 0.05$ and partial $\eta^2 = 0.02$. Contrary to expectations, neither the culture main effect nor the culture × consumption interaction was significant, $p$s ≥ 0.48, partial $\eta^2$s ≥ 0.003. Thus, much like Kunda’s (1987) female high coffee consumers, our high soft drink consumers (Chinese $M = 5.66$, SD = 1.35 and Canadian $M = 5.52$, SD = 1.51), regardless of their cultural background, displayed significantly more defensiveness than did our low soft drink consumers (Chinese $M = 6.08$, SD = 1.17 and Canadian $M = 5.92$, SD = 1.48).

The procedure used in Experiment 2 also allowed us to examine another indicator of defensiveness, changes in self-reported soft drink consumption levels. That is, both before (prescreening) and after reading the article, participants reported the number of soft drinks they consumed in a week, and these data were analysed using a 2 (culture) × 2 (level of consumption) × 2 (time: before vs. after reading the article) mixed-model ANOVA with time as a within-subjects factor. The main effects of culture, consumption level and time were significant as were all of the two-way interactions, $F$s(1, 177) > 9.75, $p$s < 0.002 and partial $\eta^2$s > 0.05. However, all of these effects were qualified by the predicted culture × consumption × time interaction, $F(1, 177) = 6.26$, $p < 0.02$ and partial $\eta^2 = 0.03$.

To interpret this three-way interaction, pair-wise $t$-tests (Toothaker, 1991) were conducted, and the means for the Chinese and European-Canadian high and low consumers before (Time 1) and after (Time 2) reading the article are shown in Figure 2. As expected, neither the Chinese nor European-Canadian participants who were low consumers of soft drinks significantly altered their self-reported consumption levels, $ts(177) < 0.52$, $p$s > 0.60. In contrast, both the Chinese and European-Canadian high-consumption groups significantly decreased the number of soft drinks that they reported drinking in a week, $ts(177) = 5.54$ and 13.76, respectively, $p$s < 0.001. Unfortunately, a direct pair-wise comparison of the Chinese and European-Canadian high-consumption participants’ consumption levels at Time 2 would not be meaningful because their Time 1 levels were different. However, if we convert the Time 1 and Time 2 self-reports into a difference score, Chinese high consumers ($M = -1.41$, SD = 2.82) revised the number of soft drink that they consumed less than did the European-Canadian high consumers ($M = -4.20$, SD = 6.24), $t(177) = -3.86$, $p < 0.001$. In other words, when they learned that they
were engaging in a behaviour (consuming soft drinks) that threatened their health, both Chinese and European-Canadians suddenly recalled consuming fewer soft drinks than they had before they read the article, but Chinese decreased their report of risky behaviour less than did the European-Canadians.

In sum, on one set of measures (defensiveness index) no cultural difference was observed, but on another measure (soft drink consumption), a weaker self-defensive bias was found for Chinese replicating Experiment 1. This pattern is consistent with previous research (Heine et al., 2002) comparing cultural differences using subjective scales like our defensiveness index to more concrete measures like our consumption self-report. According to Heine et al. (2002), the reference group effect is less of a problem for our within-country comparisons in Experiment 1 than our between-country comparisons in Experiment 2 because individuals from the same country should be exposed to the same reference groups for making their judgements. So, then, the results from our first two studies do yield a consistent pattern. Both the defensiveness index in Experiment 1 and the behavioural self-report in Experiment 2 show that Eastern and Western cultural groups respond defensively to negative health feedback, but that this bias is attenuated in people from Eastern cultures. Also, because this pattern was obtained using different measures and different methods, we should be especially confident in our results (cf. Heine et al., 2002).

**Experiment 3: Primed interdependent versus independent self-construal diagnosis responses**

As already mentioned, researchers have focused on divergent self-construals to explain cultural differences in responses to positive and negative feedback...
(e.g. Heine et al., 1999; Ko & Kim, 2010). That is, for East Asians, threats to the
individual are not as important because they typically exhibit an interdependent self-
construal focusing on their importance in relation to other people rather than their
individual self-worth. North Americans, however, have more independent self-
construals; therefore, threats to personal or internal attributes have a more direct
impact on their individual identity or self-concept.

To determine experimentally if self-construals were related to the defensiveness
results obtained in our first two studies, we employed a self-construal priming proce-
dure rather than comparing participants with different cultural backgrounds. We
hypothesised that participants would exhibit higher levels of defensiveness in response
to unfavourable than the favourable health feedback, but this difference would be
smaller for those primed with an interdependent than an independent self-construal.

Method

Participants

For an extra 1% towards their final introductory psychology mark, 74 European-
Canadian students from Queen’s University participated in this study. Ten
participants were excluded for various reasons. One participant who had a high
hypochondria score on the Whitely Index was excused from the study prior to the
diagnosis manipulation. Five participants experienced various procedural failures
(e.g. test strip did not change colour, etc.), and four were suspicious about the
experimental manipulation. As a result, the final analyses were conducted using the
remaining 64 participants (53 women and 11 men). Participants were randomly
assigned to one of the four experimental conditions in the 2 (self-construal prime:
independent vs. interdependent) × 2 (diagnosis: favourable vs. unfavourable)
between-subjects design.

Procedure

The procedure was identical to that in Experiment 1 with the following two
exceptions. First, after completing the blood pressure report but before being
introduced to the TAA test, the participants engaged in the self-construal priming
task (Trafimow, Triandis, & Gotto, 1991; Vohs & Heatherton, 2001) instead of
completing several personality measures as they did in Experiment 1. Specifically,
participants in the interdependent self-construal prime were instructed: ‘For the next
two minutes, you will not need to write anything. Please think of what you have in
common with your family and friends. What do you expect yourself to do?’
Participants in the independent self-construal prime were instructed: ‘For the next
two minutes, you will not need to write anything. Please think of what makes you
different from your family and friends. What do you expect yourself to do?’

Results and discussion

As in Experiment 1, a defensiveness dependent measure was constructed by
averaging the two questions about the participants’ confidence in their current and
the future likelihood of the same TAA test result (r = 0.64, p < 0.001). Lower scores
on this index indicated greater defensiveness or less acceptance and the data were
analysed using a 2 (self-construal prime: interdependent vs. independent) × 2 (diagnosis: favourable vs. unfavourable) ANOVA. Main effects of both the prime and diagnosis were marginally significant, $F$s(1, 60) > 3.47, $p$s < 0.07 and partial $\eta^2$s < 0.06, but they were qualified by the predicted prime × diagnosis interaction, $F$(1, 60) = 4.73, $p$ = 0.03 and partial $\eta^2$ = 0.07.

To interpret this interaction, pair-wise comparisons were conducted (see Figure 3 for the means). As expected, the independent prime participants were more defensive in the unfavourable condition compared to the favourable diagnosis conditions, $t$(60) = 2.91, $p$ < 0.01. However, the interdependent prime manipulation made the defensive reaction completely disappear, $t$(60) = 0.17, $p$ > 0.46. In other words, unlike the cultural differences in Experiments 1 and 2 that showed only an attenuated effect, the strongest group differences were obtained using the self-construal priming procedure. Moreover, similar to the results of Experiment 1, within the unfavourable diagnosis condition, interdependent prime participants ($M$ = 7.07, $SD$ = 1.31) were less defensive than independent prime participants ($M$ = 5.47, $SD$ = 1.15), $t$(60) = 2.81, $p$ < 0.01, but the two groups did not differ in the favourable diagnosis condition ($Ms$ = 6.97 and 7.09, $SD$s = 2.05 and 1.61, for the interdependent and independent primes, respectively), $t$(60) = 0.22, $p$ > 0.82. In sum, participants were more defensive when they received negative *versus* positive health feedback, but only when their independent self-construal was predominant. When their interdependent self-construal was activated, they were equally accepting both types of feedback.

**General discussion**

In three studies, we found culture and self-construal differences for defensive responses to negative health feedback. More specifically, in Experiment 1, all
participants were less accepting of an unfavourable than a favourable medical diagnosis, but this difference was smaller for our North American participants of East Asian than European descent. We replicated this pattern in our second study using a different paradigm, but only for the more concrete frequency-based measure. Although the bias was not completely eliminated in the first two studies that used participants from different cultural backgrounds, it was in Experiment 3 when we manipulated self-construal. That is, no differences were observed between the favourable and unfavourable diagnosis conditions for those primed with an interdependent self-construal. In other words, our strongest results were obtained with a temporary increase in perceived self-interdependence than with the cultural background associated with this self-construal.

**Health versus other judgements**

As we already mentioned, the only study (Ji et al., 2004) in Heine and Hamamura’s (2007) meta-analysis that showed greater self-enhancement by East Asians than North Americans pertained to health. This result taken together with our findings of self-enhancement biases, albeit attenuated, in people from Eastern cultural backgrounds lends support to our original inclination that the health domain differed in important ways from the more often studied ability and performance domains.

Indeed, whereas Norenzayan and Heine (2005) categorised self-enhancement for achievement motivation as the lowest level of universal above a nonuniversal (i.e. an existential universal) in their universality taxonomy, we found evidence for much greater commonality for self-enhancement biases regarding one’s health. If you average the effect sizes for Experiments 1 and 2, the effect for Westerners is twice as large as that for Easterners, which, according to Norenzayan and Heine, would not support defensive responses to negative health feedback as the highest level of universal (i.e. an accessibility universal). Still, because the general effect was observed across all three cultural groups, East Asians, Asian-Americans and European-North Americans, the data meet their criteria for the next highest level of universal (i.e. a functional universal).

One difference between health and other judgements may come from the mechanism by which self-construal affects people’s responses. The typical self-construal explanation does make a lot of sense in the ability domain where it most often has been tested, but it is less easy to see how this process is applicable to the health domain. That is, an unfavourable medical test result indicating that one is predisposed to an illness would seem difficult to rationalise away by vowing to work harder before being-tested again. Moreover, would not being sick mean that you will not only be a poor group member but actually a burden, and therefore should that not be even more threatening to someone whose interdependent self is predominant?

One explanation comes from work on self-construal and regulatory focus in which an interdependent self was shown to be associated more with a prevention focus than a promotion focus (Lee, Aaker, & Gardner, 2000). When people have a prevention focus, they typically are more vigilant about things that could go wrong and affect their responsibility to others. Thus the Eastern self may be more adapted to deal with negative information and more hopeful that improvements can be made.
In addition, perhaps self-construal has other effects. For example, in relation to the self-construal prime, perhaps thinking about one’s commonalities with friends and family has a comforting effect that could make people more open to bad news as they know a support system is in place. An activated interdependent self-construal could also work by eliciting other factors associated with the interdependent self, like lay theories of change (Ji, Nisbett, & Su, 2001). According to this view, Easterners should be more accepting of negative information because they view the world as cyclical, alternating between good and bad times. Thus if one has a negative experience such as learning that one may be ill, a good experience is likely to follow, such as learning that one can get better.

Although these mechanisms may coexist and are not intended to be mutually exclusive, future research should examine these explanations as well as other factors about health that lead to a greater universality of self-defensive biases in this domain compared to others. In general, research on other types of health decisions should also be conducted to determine if limits exist even within the health domain for the cross-cultural and self-construal similarities and differences that we observed. For example, the recent studies by Ko and Kim (2010) and Uskul and Oyserman (2010) that we discussed earlier may point to some potential limiting conditions. Therefore, one place to start might be an attempt to replicate those studies by including control groups that are not exposed to the priming or framing manipulations and by conducting the direct statistical comparisons between the cultural groups.

**Other future directions**

Based on our results, a relatively short and easy refocusing manipulation (i.e. the interdependent self-construal prime) could assist people in being more accepting of negative health information. Self-construal priming has shown to be effective both for Easterners and Westerners (Gardner, Gabriel, & Lee, 1999), but our study of its effects on responses to health feedback included only European-Canadians. Thus, future research should examine if the interdependent self-construal prime would eliminate defensive responses to health risk information in other cultural groups as well. If so, research could also examine if greater acceptance, which should be less-cognitively taxing than defensive processes (cf Ditto & Lopez, 1992), allows patients to better understand or remember the information they receive immediately after their diagnosis about their medical condition and possible treatments.

In addition, although everyone, except those primed with an interdependent self-construal, showed some defensiveness in response to the unfavourable health information, people of East Asian descent were more accepting of this information than European-North Americans. If people are more accepting of negative health information, then they should be more open to their doctor’s recommendations and could be even more compliant with such recommendations. Future research should investigate if the cross-cultural and self-construal priming differences that we observed translate into meaningful behavioural differences in areas like treatment adherence and willingness to not only make but also to maintain healthy lifestyle changes. Another interesting avenue would be to explore whether or not East Asians recognise they are more accepting of negative health information or anticipate that they would be able to cope with it and, therefore, are also more willing to even be tested in the first place.
Conclusions

Our research has both theoretical and practical applications. We have shown that self-serving biases are more universal when it comes to health judgements than previous research has shown for judgements in other domains. Furthermore, we also have identified important influences on people’s health responses. Specifically, East Asian culture appears to be a factor that can attenuate people’s defensive reactions and temporary interdependent self-construal activation actually can eliminate such unfavourable responses altogether. Because the ability to foresee patients’ thoughts (acceptance or denial) and related behaviours (seeking treatment or not) is crucial to ensure that patients receive the medical assistance that they need, these findings should provide useful information for medical practitioners as well.

Acknowledgements

This research was supported in part by a Queen’s University Advisory Research Committee grant awarded to Jill A. Jacobson and by a Canadian Foundation for Innovation Grant awarded to Li-Jun Ji and Jill A. Jacobson. Portions of this research were completed in partial fulfilment of the requirements for Sarah K. (Reiss) Warren’s and Veronica Legnini’s honour’s theses, both supervised by Jill A. Jacobson. Also partial reports of these data were presented at the Ontario Symposium and the Society for Personality and Social Psychology annual meeting. We would like to thank Eunkook M. Suh for his preliminary assistance with this research. We also are grateful to the following people for their help with the data collection: Michael Barnett-Cowan, Wendy Beattie, April Black, Jessica Bloomfield, Danielle Jarrie, Amanda Ott and Laura Rosen.

Notes

1. Throughout this article, North Americans will be used as a simpler way to refer to Americans and Canadians. Mexicans are not included in this group.
2. Using the same basic procedure as Experiment 1, we collected data from 70 additional participants (49 Asian-Americans and 21 European-Americans) to determine if changing the TAA prevalence information would affect the results. Participants in this data collection were told that one in 20 (5%) people in the population were TAA-positive instead of one in five as in Experiment 1. The same pattern of results was obtained. Participants in the unfavourable condition (M = 5.51) were significantly more defensive than those in the favourable condition (M = 7.19), F(1, 66) = 20.89, p < 0.001, but this main effect was qualified by the predicted culture X diagnosis interaction, F(1, 66) = 4.19, p < 0.05. Both Asian-American and European-American participants were significantly more defensive in the unfavourable compared to the favourable condition, ts(66) ≥ 2.32, ps < 0.05. Within the unfavourable condition, Asian Americans (M = 5.96) were significantly less defensive than were European Americans (M = 4.67), t(66) = 2.18, p < 0.05, but Asian Americans (M = 7.06) and European Americans (M = 7.56) did not differ in the favourable diagnosis condition, t(66) = 0.78, p > 0.50.
3. One potential alternative explanation is that this cross-cultural difference was due to a floor effect for the Chinese. That is, one could argue that the Chinese high consumers had less room to decrease their consumption levels than did the European Canadian high consumers because the former group started out at a lower level of consumption than did the latter group. Indeed, when considered in terms of percentage decrease in soft drink consumption the difference between the Chinese and Canadian samples (23% decrease vs. a 28% decrease, respectively) is less pronounced.
4. In our Experiment 1, the size of the diagnosis condition effect for the European-North Americans (partial η² = 0.53) was 2.75 times as large as the effect for the Asian-Americans (partial η² = 0.19), but in our Experiment 2, the size of the effect was down to 1.31 times as large for the European-Canadians (partial η² = 0.20) versus the Chinese (partial η² = 0.05).
\( \eta^2 = 0.16 \) for changes in self-reported consumption. Notably, the pattern actually reversed for the defensiveness index with the Chinese effect (partial \( \eta^2 = 0.03 \)) being 1.59 times as large as the European-Canadian effect (partial \( \eta^2 = 0.02 \)). However, the meaningfulness of that measure for cross-national cross-cultural comparisons is questionable, according to Heine et al. (2002). The effect sizes from Experiment 3 are not relevant to this debate because we sampled only one cultural group, European-Canadians.

References


