

RUNNING HEAD: SELF-ASPECTS AND ILLNESS-RELATED EMOTIONS

The Role of Self-Aspects in Emotions Elicited by Threats to Physical Health

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Authors' Note

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Physical health problems can put individuals into an emotionally charged situation. A wide range of emotional responses can appear at various stages of a health problem in response to related symptoms, diagnoses, and treatments. Physical health problems inherently involve one person and the suffering he or she goes through, and therefore the experience of such problems would be expected to be primarily associated with the experience of self-focused emotions. However, individuals who are faced by physical illness may also experience emotions related to issues involving their social identities and relationships between themselves and social others. In two studies we examined emotions that are likely to be experienced when faced with a physical health problem, with a focus on emotions that are socially engaging and socially disengaging. The first study examined emotions experienced when asked to imagine oneself in a hypothetical situation involving a physical health problem. The second study explored the emotions individuals recall having experienced when faced with a real physical health problem. We further asked whether the experience of emotions that involve the self or social others in the context of physical health problems can be predicted by the type of self-aspect endorsed.

Socially Engaging and Socially Disengaging Emotions

Emotions have been categorized and discussed within different theoretical frameworks. Here, we discuss emotions in terms of their role in the relationships the person has with the social world. According to this perspective, emotions are experienced differently as a result of the norms and values of the social contexts in which individuals operate. As Kitayama, Markus and Matsumoto (1995) argued, emotions play a crucial role in “managing relationships with other persons, defining the self, maintaining the self’s worth or dignity, and organizing appropriate action in many social situations” (p. 442). The authors distinguished between emotions that encourage the independence of the self from those that encourage

interdependence. For example, some emotions, such as pride or feelings of superiority, occur when one has accomplished one's goals or desires, or has confirmed desirable inner attributes, such as intelligence and wealth. Similarly, some negative emotions, such as anger and frustration, result primarily from the blocking of one's own goals and desires. In both cases, one's inner attributes are made salient and are contrasted against social context. These emotions reinforce the self in its separation or disengagement from social relationships, and promote the perceived independence of the self from relationships and are therefore called socially disengaging emotions (sometimes also referred to as ego-focused emotions (Markus & Kitayama, 1991, 1994)).

In contrast, other positive emotions such as friendly feelings and feelings of respect tend to result from being part of a close relationship and, once experienced, they further encourage the interpersonal bond. Certain types of negative emotions, such as feelings of indebtedness or guilt, share similar characteristics, as they tend to result from one's failure to participate successfully in an interdependent relationship, or from doing harm to a relationship. When experienced, these emotions would motivate one to restore the harmony in the relationship by compensating for the harm done or by repaying the debt. These behaviours will continue to engage and assimilate the self in relationships and thus enhance the perceived interdependence of the self with relevant others and therefore called socially engaging emotions (Markus & Kitayama, 1991, 1994).

Cross-cultural studies have documented differences in the degree of socially engaging and -disengaging emotion experienced in cultural groups, and these differences may be related to how individuals in these cultures define themselves in relation to social others (e.g., (Kitayama, Markus & Kurokawa, 2000; Kitayama, Mesquita, & Karasawa, 2006; Mesquita, 2001). Specifically, the existing evidence on the experience of such emotions suggests that

their experience may be the consequence of the nature of the self as either independent or interdependent. The current paper aims to extend this work by explicitly testing whether the experience of socially engaging and -disengaging emotions is related to individual (within culture) differences in self-aspects. In these studies, we will also go beyond the independent-interdependent self distinction by examining the role of individual, relational, and collective selves in the experience of these emotions.

Subjective Construal of the Self

Contemporary self theories argue that the self is made up of different aspects that guide human thought, feeling, and behavior. One theoretical framework that provides an organizing structure to different aspects of the self argues that a distinction between individual, relational, and collective self should help us understand the self in terms of unique personal qualities, relationship with significant others, and social identities derived from membership in collectives (see Brewer & Chen, 2007, for a review). This tripartite view of self extends the early distinction between two self-aspects: independent and interdependent selves (Markus & Kitayama, 1991) or collective and individual selves (Triandis, 1989). The individual or independent self is based on a definition of self as autonomous, separate, and unique; as having clear-cut boundaries between its own cognitive representations and those of others, and as being constructed on the basis of the individual's abilities, traits and attributes (e.g., Cross & Madson, 1997; Markus & Kitayama, 1991). In the tripartite view of self, the interdependent self is broken down into relational and collective selves, following evidence of different kinds of interdependence experienced by members of western and eastern cultural groups (e.g., Kashima, Yamaguchi, Kim, Chui, Gelfand, & Yuki, 1995). The relational self reflects self-definitions derived from ties with specific others, the quality of these relationships, one's interpersonal roles, and characteristics shared with significant others (Aron, Aron, & Smollan,

1992; Cross & Madson, 1997). The collective self refers to self-definitions derived from one's social identities based on memberships in in-groups or social categories and is thought to be associated with an emphasis on group affiliation, in-group norms, and the roles and status defined by collectives (Triandis, 1995). In the current studies, we relied on individual-level endorsement of individual, relational, and collective self-aspects.

Physical Health Threats and Emotions

It is widely acknowledged that a threat to one's health leads not only to specific cognitions about the situation, but also to the experience of a wide range of emotions (e.g., Andersen, Kiecolt-Glaser, & Glaser, 1994; Love, Leventhal, Easterling, & Nerenz, 1994). Physical threats can induce emotional reactions through a variety of direct and indirect paths, such as the threats' meaning or the value attached to them, their impact on physical function (e.g., Brown, 1990), or by causing depressed affect through cell depletion of neurotransmitters (Leventhal, Patrick-Miller, Leventhal, & Burns, 1997). Emotions in illness contexts have also been known to either precede or follow cognitions and to have a major influence on behaviour (e.g., Leventhal & Scherer, 1987). Recognizing the importance of emotions in illness states, Leventhal and his colleagues developed the self-regulation model with a parallel-response framework, which combines a cognitive and an emotional path (e.g., Leventhal, Leventhal, & Cameron, 2001). The cognitive path consists of the psychologically "objective" representation of the health threat with its coping procedures and evaluative processes, whereas the emotional path consists of the "subjective" or emotional processing system, which creates feeling states, and the coping procedures and appraisal rules for the management of the system.

Despite the fact that health problems are believed to be associated with the experience of diverse emotions, research on health and emotions has not distinguished between different types of emotions, and the consequences that these different emotion types might have on

health related behaviours. The emotions that have been studied in the health literature are typically negative emotions, such as anxiety, anger, fear, distress, and devastation, which are likely to be directed at oneself or at various aspects of the ill physical state, such as symptoms, diagnosis, and treatment. However, previous research on concerns raised by illness has shown that people's concerns associated with a physical health threat can go beyond personal issues and the characteristics of the illness state and can involve aspects of one's social identities and one's self that are in-relationship-to-others (Uskul, et al., 2003; Uskul & Hynie, 2007). Concerns around being a burden to others or being unable to fulfill responsibilities towards loved ones (social concerns) can be part of the responses to the physical problem in addition to concerns about how the health problem will affect one's plans and accomplishments in life (personal concerns).

Although everyone is likely to experience both types of concerns to some extent, research has shown that the experience of social concerns in the face of a health problem is predicted by the extent to which individuals value relationships with in-group members, and group goals over individual goals; in other words by the extent to which they endorse a collective self. In contrast, the experience of personal concerns tends to be predicted by the extent to which individuals value the importance of the unique self in life events over social relationships; in other words the extent to which they endorse an individual self (Uskul & Hynie, 2007). Given that emotions are contingent on concerns (Frijda, 1986; Mesquita & Karasawa, 2002), we predict that the kinds of emotions experienced in the face of a health problem will also be influenced by the extent to which the self is an autonomous entity, highlights relationships, or emphasizes social group memberships. Thus, we hypothesize that the experience of emotions contingent on personal concerns (socially disengaging emotions) will be predicted by an individual self-aspect and that the experience of emotions contingent on

social concerns (socially engaging emotions) will be predicted by relational and collective self aspects.

Study 1

The main purpose of Study 1 was to examine the extent to which different self-aspects predict the experience of socially engaging and socially disengaging emotions evoked by physical health threats. We asked participants to imagine having a health problem by reading a hypothetical scenario that described either back pain or dizziness. The scenarios varied in the level of interference and dependence the health problem caused in the individuals' lives. These two aspects of illness severity were manipulated in order to explore whether becoming dependent on others as a result of a health problem, and/or having the health problem interfere with one's life, would affect the emotions experienced and if this, in turn, would be moderated by the endorsement of different self aspects. We hypothesize that endorsement of a relational and a collective self will predict the experience of socially engaging emotions and that endorsement of an individual self will predict the experience of socially disengaging emotions. We also hypothesize that health problems with a high level of interference will be associated with greater experience of socially disengaging emotions and that health problems with a high level of dependence will be associated with greater experience of socially engaging emotions.

Method

Participants. As part of a larger study, 269 undergraduate students ($M_{\text{age}} = 23.42$, 78 men and 190 women; 1 participant failed to mention his/her sex) were recruited from different psychology courses or through the university research participant pool in exchange for course credit. One-third (31.6%) identified their ethno-cultural background as European, 20.1% as Canadian, 17.0% as East Asian, 14.0% as either Caribbean or African, 7.4% as South Asian, and 8.6% as Middle-Eastern. Five participants failed to indicate their ethnicity.

Procedure and Design. The study was described as a survey of how individuals respond to physical health problems. Participants were first asked to read a scenario describing a physical health problem and then to rate the extent to which they thought that they would experience each of a set of emotions if they were to find themselves in the situation described in the scenario. They then filled out a scale designed to measure individual, relational, and collective self-aspects, followed by demographic questions. *In a between-subjects design, participants were randomly assigned to read one of the 8 illness scenarios described below and completed the study in the lab setting.*

Study Materials.

Illness scenarios. The questionnaire included one of eight different illness scenarios. *Two different types of illnesses were used to test whether a similar pattern of findings emerged across different types of illnesses and ensure that it was not due to idiosyncrasies of one type of illness.* Thus, four of these illness scenarios were created using a back pain example, and the other four used a dizziness example. There were two levels (high and low) of interference and two levels (high and low) of dependence that were fully crossed across scenarios. The following is an example of the back pain scenario with low levels of dependence and low levels of interference:

“Imagine that you had been suffering from back pain that was caused by a small lump in your spinal cord. Although the lump was successfully removed, the after-effects of the operation caused some difficulties in walking and moving around, *but you are still able to function in your daily life.* Your physician has told you that you should avoid carrying heavy things, walking long distances and especially driving for the rest of your life since these would be potential triggers for a future back problem. *However, you don't expect this to be a big*

problem since you live in a neighborhood with easy access to public transportation.” (No italics were used in the original scenarios).

In the high interference condition, the first italicized section was replaced with “*that interfere with your daily life*” to emphasize that the problem had started to interfere with fulfillment of the person’s daily responsibilities. In the high level of dependence condition, the second italicized section was replaced with “*This will make you very reliant on others because you live in a neighborhood with little access to public transportation*” to emphasize dependence on others for transportation and consequently for many other things in life.

The scenarios were pilot tested before they were employed in this study. Thirty-one participants (22 women, 9 men with 87% of them falling between the range of 20 and 39 years) were asked to respond to several questions about the illness scenarios, including “How much do you think this situation would interfere with your daily life?” and “How much dependency on others would this situation cause?” The results of the pilot test confirmed that participants reliably differentiated between high and low dependency scenarios and between high and low interference scenarios **across both types of illnesses**, as expected. **The responses to two further questions on the vividness with which the scenarios could be imagined and the extent to which the scenarios could represent true situations were similar across the two types of illnesses and the different interference and dependency levels.**

Emotion items. Respondents were asked to indicate the extent to which they believed they would experience the twenty-three emotions listed if they found themselves in the situation depicted in the scenario, using a 7-point Likert-type scale (1: not at all to 7: extremely). Emotion items were selected based on an open-ended discussion with a group of 9 students of mixed ethnic background and sex on emotions that can arise due to health problems. The final list included 15 negative emotions (e.g., sad, guilty); 5 positive emotions

(e.g., hopeful, strong); and 2 neutral emotions (e.g., surprised, responsible). Some of these emotions were socially engaging (e.g., embarrassed, ashamed), and others were socially disengaging (e.g. frustrated, angry).

Individual-Relational-Collective Self-Aspects Scale (RIC). The RIC, developed by Kashima and Hardie (2000) combines the measurement of individual, relational, and collective self aspects in three subscales. This scale consists of 10 statements, each followed by three options reflecting the three self-aspects. Respondents rate each option in terms of applicability to the self using a 7-point Likert type scale (1: not like me, not true of me, to 7: like me, very true of me). An example statement is “I think it is important in life to:” and the three options reflecting the three self aspects are: a) have personal integrity/be true to myself (individual) (RIC-I), b) have good personal relationships with people who are important to me (relational) (RIC-R), c) work for causes to improve the well-being of my group (collective) (RIC-C). The scale yields three scores revealing the relative prominence of each self-aspect (RIC-I: $\alpha = .68$ ($M = 5.96$, $SD = .64$), RIC-R: $\alpha = .69$ ($M = 5.94$, $SD = .59$), RIC-C: $\alpha = .82$ ($M = 5.24$, $SD = .89$)).

Results

Preliminary analyses conducted to examine whether the pattern of results showed variation across the two types of illnesses and participant sex revealed that neither of these variables emerged as a significant variable or significantly interacted with other variables. We therefore collapsed the data across the two types of illnesses and both sexes and report the findings based on the entire sample.

Emotion Scale. Principal axis factoring was used to conduct an exploratory factor analysis on the emotion ratings to examine whether socially engaging and socially disengaging emotions formed distinct categories. A scree plot for the initial exploratory factor analysis

suggested a 3-factor solution. The factor analysis was repeated, forcing a 3-factor solution and using an orthogonal rotation. Negative emotions that implied a state of sadness and loss with potential implications for social withdrawal loaded clearly on the 1st factor (anxious, sad, frustrated, disappointed, loss, and grieved; see Table 1). Negative emotions with implications for the person to engage in social context loaded on the 2nd factor (embarrassed, ashamed, and guilty). The 3rd factor consisted of positive or neutral emotions. This 3-factor solution explained 51.19% of the total variance with 32.49% explained by the 1st factor, 12.61% by the 2nd, and 6.09% by the 3rd.

Following the factor structure, two emotion subscales were created with the items that clearly loaded on the first or the second factor. The first subscale consisted of 6 emotions and was called the socially disengaging emotion factor ($\alpha = .85$, $M = 4.69$, $SD = 1.26$). The second subscale consisted of 3 emotions and was called the socially engaging emotion factor ($\alpha = .82$, $M = 3.09$, $SD = 1.60$). *These emotions factors were moderately correlated, $r = .53$, $p < .001$ (see Table 2 for all correlations).*¹

Self-aspects and socially disengaging and socially engaging emotions. To examine the relationship between the criterion variables (socially disengaging and socially engaging emotions) and the predictors (individual-relational-collective self aspects, interference and dependence), two separate hierarchical regression analyses were conducted. Following Aiken and West (1991), the two categorical predictors (interference and dependence) were effect coded, the three continuous predictors (individual, relational, and collective self aspect scores) were centered, and the product terms were created for 2-way interactions. The main effects were entered in step 1 of the regression, followed by the interaction terms between the self-aspects scores and the two categorical variables in the step 2.²

The first hierarchical regression with socially engaging emotions as the criterion revealed a significant R^2 at the end of step 1 only, $R^2_{adj} = .08$, $F_{\Delta}(5,263) = 5.78$, $p < .001$. The three significant predictors in Step 1 were collective self aspect (RIC-C), $\beta = .22$, $t(263) = 3.15$, $p = .002$, dependence, $\beta = .17$, $t(263) = 2.90$, $p = .004$, and interference depicted in the illness scenarios, $\beta = .12$, $t(263) = 2.08$, $p = .04$. The addition of interaction terms in step 2 did not contribute significantly to the explanation of the variance of the criterion variable ($R^2_{\Delta} = .08$, $p = .65$). Thus, the experience of socially engaging emotions was positively associated with the endorsement of collective self, the level of dependence and interference created by the imagined health problem.

The second hierarchical regression with socially disengaging emotions as the criterion revealed a significant R^2 at the end of step 1 only, $R^2_{adj} = .04$, $F_{\Delta}(5,263) = 2.94$, $p = .013$. The only significant predictor in this step was the level of dependence depicted in the illness scenario, $\beta = .15$, $t(264) = 2.45$, $p = .015$. The addition of the interaction terms in step 2 did not contribute significantly to the explanation of the variance ($R^2_{\Delta} = .03$, $p = .75$).³

Discussion

This study confirmed that socially disengaging and socially engaging emotions emerged as two distinct categories in an illness situation; the factor analysis of emotion items yielded a solution with socially disengaging and socially engaging emotions loading on separate factors. The emergence of two separate emotion factors support previous findings in the emotion literature, namely that emotions situating individuals in social settings (such as embarrassment, guilt, and shame) are qualitatively different from the emotions that are experienced as disengaging from the social setting (e.g. Kitayama, et al., 1995, 2000, 2006).

Study 1 findings also supported the hypothesis that endorsement of the collective self, as measured by the RIC subscale, significantly predicted the experience of socially engaging

emotions. The more participants endorsed a collective self-aspect, the more likely they were to anticipate experiencing socially engaging emotions in the face of a health threat. The hypothesis that endorsement of the individual self would predict the experience of socially disengaging emotions was not supported.

The relational self did not appear as a significant predictor of the experience of socially engaging emotions but the reason for this may be primarily statistical. Endorsement of the relational self significantly predicted the experience of socially engaging emotions on its own, with a slightly smaller contribution to the variance in the criterion variable than of the collective self-aspect. When entered into the regression simultaneously with the collective self-aspect measure, due to multicollinearity caused by the high correlation between the RIC-R and RIC-C measures ($r = .51$), the relational self-aspect became a non-significant predictor in the equation. The high correlation between these two self-aspect measures also indicates that the relational and collective self-aspects were not successfully distinguished in this particular sample as measured by the RIC scale. This may be a product of the characteristics of the RIC scale, which asks respondents to rate all three aspects of the self in each question, which might have led to a lack of differentiation between the relational and collective self-aspects. As an additional reason, Kashima, Kashima, and Aldridge (2001) suggested that these two selves may have conceptual similarities to the extent that an in-group contains significant interpersonal relationships.

The level of dependence manipulated in the illness scenarios had an effect on the reporting of both socially engaging and socially disengaging emotions. This may occur because being dependent could be interpreted as both losing independence and personal agency (an individual concern) and as being a burden on others (an interdependent concern). In other words, having to depend on others may present itself as a threat to one's self both in terms of

asserting one's independence and functioning fully as an interdependent self. This interpretation is supported by recent findings in the literatures on social support and patient-caregiver interaction. On one hand, studies on cultural differences in social support seeking show that individuals with greater endorsement of interdependence (e.g., Asian Americans) are less likely to seek social support than individuals with stronger endorsement of independence (e.g., European-Americans) due to concerns related to relational implications of asking for help. Importantly, among interdependent individuals, seeking social support predicts experience of emotions such as shame (for a review see Kim, Sherman, & Taylor, 2008), suggesting that having to depend on others for help is associated with the experience of socially engaging emotions. On the other hand, self-perceived burden that patients may experience due to their dependence on their caregivers can be associated with frustration and worry (Cousineau, McDowell, Hotz, & Hebert, 2003). Moreover, having to depend on others due to health related problems may be perceived as a limitation in personal freedom (Sundin, Bruce, & Barremo, 2010). Overall these findings demonstrate that the emotional consequences of dependence can manifest themselves in different forms.

Interference did not predict the experience of socially disengaging emotions, not supporting our hypothesis. The data, however, revealed an unexpected finding in that the experience of socially engaging emotions was also predicted by high levels of interference. Participants might have interpreted interference as the health problem getting in the way of their ability to fulfill their social roles. One would expect that this should have been perceived as especially threatening among those who endorsed a stronger interdependent self; however the absence of an interaction between interference and collective self aspect shows that this was not the case. Given that we used a pilot study to explore perceptions of the two scenarios rather than including a manipulation check or a control condition in the current study, we do

not have evidence to clarify how the participants in this study interpreted the interference and dependence levels of the illness scenarios. One possible reason for the lack of an interference effect on the experience of socially disengaging emotions might be that participants viewed low and high interference scenarios similarly. A future study including detailed measures of participants' perceptions of illness scenarios could shed light on these unexpected findings.

In the following study, rather than manipulating characteristics of a hypothetical illness scenario, we asked participants open-ended questions about emotions they recalled experiencing in the face of a past health problem. Open-ended accounts of emotions will also allow tackling potential problems associated with responses produced to hypothetical scenarios. When asked to produce hypothetical emotion reports, individuals tend to rely on estimation of their reactions to a situation described in a scenario in the absence of specific episodic details (Robinson & Clore, 2002). Thus it is likely that hypothetical prompts may trigger normative theories about situational influence. Asking about memories related to real events should better address the relationship between individuals' personal emotional responses by making them reflect on their own illness experiences. Furthermore, we wanted to test the factor structure of the emotions included in Study 1 among adults with real health problems and test our predictions employing more commonly used measures of independent and interdependent self-aspects.

Study 2

Study 2 was designed to go beyond closed-ended questions of emotions to examine individuals' spontaneous self-generated emotion descriptions in the face of an actual past health problem and how these descriptions relate to different self-aspects endorsed. It has been suggested that studying self-generated emotions has advantages over studying responses to a specific set of emotions presented by the researcher because this avoids potential problems

such as making participants focus on a particular set of emotions (Semin et al., 2002). In addition, in Study 2, illness-related emotions were examined in a real patient population with a wider age range, with the goal of having a more comprehensive understanding of the relation between self-aspects and illness-related emotions that is applicable to the larger population. To those ends, we asked a sample of adults to freely describe a personal health problem and to respond to open-ended questions about the emotions they experienced during the course of this health problem. We also explored the association between responses given to close-ended emotion items used in Study 1 and individuals' open-ended accounts of their emotions.

In this study, where we asked volunteers to remember a past illness episode, our hypotheses were derived from literature suggesting that memory for emotions is a reconstructive process with systematic influences that shape what is remembered of the past. One source of systematic influence is shown to be the self concept (e.g., Feldman Barrett, 1997). Recent literature that has explored the link between specific features of self concept and memory suggests that self related information should be more detailed and better elaborated in the memories of people who endorse a strong independent self, whereas information related to self in-relation to others should be more detailed and better elaborated in the memories of people who endorse a strong interdependent self (e.g., Markus & Kitayama, 1991; Wang, 2001, 2004). Based on these past findings, we hypothesized that endorsement of the individual self will be positively associated with recall of socially disengaging emotions, whereas endorsement of the collective self will be positively associated with the recall of socially engaging emotions experienced during the course of a past health problem.

Method

Participants. Participants were 73 adults (57 women, 16 men) who were recruited by means of the following strategies: recruitment on university campus (with posters or by

advertising in adult student classes) ($n = 21$), advertisement in local newspapers ($n = 25$) and posters at various hospitals ($n = 27$). The mean age of the sample was 33.52 ($SD = 12.59$) with a range of 17 to 72. The majority of the sample identified themselves as either Canadian ($n = 32, 43.84\%$) or European-Canadian ($n = 26, 35.62\%$). The rest of the sample identified themselves as East Asian-Canadian ($n = 4, 5.5\%$), African-Canadian ($n = 2, 2.74\%$), Middle Eastern-Canadian ($n = 3, 4.11\%$), Jamaican-Canadian ($n = 2, 2.74\%$), Indian-Canadian ($n = 1, 1.37\%$), or of mixed ethnicity ($n = 1, 1.37\%$). Two participants failed to indicate their ethnicity.

Procedure. The study was advertised as one focusing on how people remember past illness episodes. Volunteers who had a minor or major health problem that affected their life for at least 2 or 3 days at any point in the last 12 months were invited to participate. Participants were either handed or sent an envelope containing a consent form, a questionnaire, and a stamped and pre-addressed envelope for returning the completed questionnaire. A second envelope was included in the package for participants to seal and send the signed consent form.

Study Materials.

Illness description task⁴. In the illness description task, participants were asked to take a moment to think of an illness episode or injury that they had experienced within the last 12 months that lasted for at least 2-3 days, and to describe it as precisely as they could. For this task, participants were given a blank sheet with instructions written across the top. Given that accuracy and quality of recall is believed to increase in the presence of contextual details (Robinson & Clore, 2001), we hoped that the task of describing the health problem in writing would bring related memories back in a vivid way. At the bottom of the page, participants were asked to rate the seriousness of this health problem on a scale from 1 (not serious at all) to 7 (extremely serious) and to indicate how long they had experienced this problem.

Open-ended question about illness-related emotions. Participants were then asked to name at least 5 emotions they had experienced during the period when they suffered from the health problem they had just described.

Closed-ended emotions scale. After completing the open-ended emotion questions, participants were given a modified version of the emotion scale used in Study 1. The list of emotions in this study included only those that clearly loaded on the socially disengaging (6 items), socially engaging (3 items), or positive/neutral emotion scales (5 items) in Study 1.

The emotion scale was included in this study for the following three reasons. First, it would enable the examination of the factor structure of the scale in a sample of community participants and serve as a validity check for the Study 1. Second, it would enable us to examine whether participants' open-ended accounts of their emotions were in line with their responses to the closed-ended questions. Finally, it would make it possible to confirm that the emotion scale covered all the relevant emotions in health-threatening situations.

Self-aspects scales. After completing the open-ended sections, the participants were given scales measuring collective and individual self-aspects. In light of the findings in Study 1, a measure of relational self-aspect was not included. The first scale was the 10-item Collective-Interdependent Self-Construal Scale by Gabriel and Gardner (1999), which taps into individuals' relations with groups (e.g., When I think of myself, I often think of groups that I belong to). The 12-item Independent Self-Construal Scale by Singelis (1994)⁵ measures the extent to which one's self is construed independently (e.g., I act the same way no matter who I am with). In both scales, respondents were asked to indicate their agreement with the items on a 7-point Likert scale (1: strongly disagree, 7: to strongly agree) (collective self-construal scale $\alpha = .92$, $M = 4.13$, $SD = 1.37$; independent self-construal scale $\alpha = .68$, $M = 5.09$, $SD = .78$).

Demographics. Finally, participants filled out the section with background questions about their age, sex, ethnicity, and whether or not they had children.

Coding of Open-ended Questions about Illness-Related Emotions. Two undergraduate students, blind to the study hypotheses, coded the responses to open-ended questions. They identified and coded the number of discrete emotion terms (e.g. “disappointed”, “angry”), the valence of the emotion term (positive, negative, neutral), and whether the emotion term was socially engaging or socially disengaging. The interrater reliability was .72 (Cohen’s Kappa); disagreements were resolved by discussion.

Results

Duration and seriousness of health problems. The duration of the health problems that participants wrote about ranged from 1 day to 20.3 years ($M = 14.7$ months, $SD = 43.20$ months)⁶. The seriousness of the health problem had a mean of $M = 4.97$ ($SD = 1.42$).

Emotion scale. The 15 emotion items were subjected to a principal axis factoring that suggested a 3-factor solution in its scree plot. The factor analysis was repeated, forcing a 3-factor solution and using an orthogonal rotation. As shown in Table 1, five out of six socially disengaging emotions (sad, anxious, loss, grieved, and disappointed) loaded on the 1st factor. Positive and neutral emotions loaded on the second factor. All three socially engaging emotions (embarrassed, ashamed, and guilty) loaded distinctively on the 3rd factor. This 3-factor solution accounted for 54.47% of the total variance, with the 1st factor accounting for 27.79% of the total variance, the 2nd factor accounting for an additional 16.51%, and finally the 3rd factor contributing 10.17% to the explanation of the total variance. Two emotion indices were formed by averaging the emotions that clearly loaded on the 1st and the 3rd emotion factors (socially disengaging emotion subscale: $\alpha = .76$, $M = 4.82$, $SD = 1.36$; socially

engaging emotion subscale: $\alpha = .80$, $M = 3.01$, $SD = 1.66$). These two emotion indices correlated positively at $r = .42$, $p < .01$.^{7,8}

Responses to open-ended emotion question. Participants overwhelmingly mentioned socially disengaging negative emotions (84.32%) when asked to recall the emotions associated with the health problem they chose to report, whereas socially engaging emotions were mentioned in lower frequency (7.03%), so were the positive socially engaging (7.03%) and disengaging emotions (1.62%). To test the first part of the study hypothesis, that recall of socially disengaged emotions would be associated with the endorsement of an individual self, a multiple regression analysis was conducted with the proportion of self-generated socially disengaging emotions as the criterion, and the individual and collective self as predictors. The regression analysis did not reveal any significant results, $R^2 = .02$, $F(2, 70) = .84$, $p = .44$.⁹ Due to the skewness of the number of socially engaging emotions generated (skewness statistic = 2.45) which violated the assumption of normal distribution (Tabachnik & Fidell, 2001), we turned this measure into a categorical variable with two levels, one representing those who did not generate any socially engaging emotions (0, $n = 52$), and another representing those who generated one or more socially engaging emotions in relation to their health problem (1, $n = 21$). A binomial logistic multiple regression analysis was conducted with the categorical self-generated socially engaging emotions as the criterion, and the individual and collective self as predictors to test the hypothesis that recall of socially engaging emotions would be associated with the collective self. The overall model was significant, omnibus $\chi^2(2, n = 73) = 6.16$, $p = .046$, with collective self-aspect emerging as the only significant predictor in this model (Wald statistic = 4.55; $B = .78$, $SE = .36$, $p = .03$). The value of the coefficient reveals that an increase of one unit of collective self-aspect is associated with an increase in the odds of generating a socially engaging emotion by a factor of 1.46.

Open and closed ended emotion questions. Zero-order correlations between the proportion of socially disengaging emotions generated in self reports of recalled emotions and their scores on the socially disengaging emotions subscale revealed that the socially disengaging emotion score was positively and significantly correlated with the number of recalled socially disengaging emotions ($r = .27, p = .02$). Again, self generated socially engaging emotions were turned into a categorical variable with two levels, one representing those who did not generate any such emotion and another representing those who generated one or more. A point-biserial correlation test revealed a marginally significant positive association between the socially engaging emotion scores on the closed ended scale and the generation of socially engaging emotions in the recall task, $r = .21, p = .07$.

Discussion

Findings provide supporting evidence for the hypothesis that the experience of socially engaging emotions would be predicted by the endorsement of a collective self. No support was observed for the hypothesis that the experience of socially disengaging emotions would be predicted by the endorsement of individual self-aspect. Replicating Study 1, socially disengaging and socially engaging emotions loaded on different factors. Thus, the distinction between these two sets of emotions held in a community sample and in the context of real health problems.

Both studies showed that endorsement of the collective self predicts the reporting of socially engaging emotions both in a more structured task (i.e., closed ended questions), in which people may respond by trying to retrieve information consistent with what is asked, as well as in a non-structured task, in which participants spontaneously recalled aspects of the health problem. Findings are consistent despite the use of different scales measuring the collective self in the two studies.

A potential explanation for the lack of association between the individual self and socially disengaged emotions in both studies may be that, in the face of a physical health problem, socially disengaging emotions that focus exclusively on the individual are experienced by everyone, regardless of how strongly the individual self aspect is endorsed. In the end, a physical health problem is first about the person who experiences the immediate physical and psychological consequences associated with the health threat. Supportive of this idea, mean scores on the socially disengaging emotion scale were consistently higher than the means on the socially engaging emotion scale. A third potential explanation is that the emotions that make up the emotion factor that we labeled socially disengaging may not necessarily be considered socially disengaging, in the sense that they are not experienced as a consequence of behaviors such as asserting and protecting one's own rights or acting on the basis of one's attitudes and judgments, behaviors that distinguish the self from the social context. It is likely that these emotions arise in an illness context because one feels frustrated with the *situation* or disappointed with *oneself* (e.g., due to not taking care of oneself properly) or one's body; thus, the emotions experienced may lack an interpersonal tone due to the characteristics of the context in which these emotions were examined, which then might have led to the lack of prediction by the endorsement of the individual self-aspect. In sum, the distinctive predictive power of different self-aspects for socially engaging and socially disengaging emotions may be observed in other life events that do not require attention to be focused on the individual or the situation at hand as much as physical health problems do.

Open Ended and Closed Ended Emotion Questions

As aforementioned, the reliance on self generated emotions rather than a specified list of emotion items identified by the researcher has several advantages (Semin et al., 2002). It should be noted that the examination of discrete emotions generated by participants in Study 2

revealed that the list used in Study 1 did cover all of the emotions participants wrote in their responses to the open ended emotion question. Thus, it suggests that the scale is an appropriate tool for measuring emotional responses in these situations.

Although Study 2 provides some evidence for the link between different self-aspects and recall of socially disengaging and socially engaging emotions experienced in the face of a past health problem, contributing to the literature on the link between self and memory (e.g., Wang, 2001, 2004; Wang, Leichtman, & White, 1998; Wang & Ross, 2005), it is not without its limitations. First, we acknowledge that using memory-based reports of emotions is subject to loss of information given the delay between the emotional experience and its report (Robinson & Clore, 2002). We hope that asking participants first to describe the health problem they chose to report on before asking them to report relevant emotions experienced at the time helped serve as a contextual cue and increase the accuracy of the recall of emotions experienced during the course of the health problem. Second, measures included in this study were different to those included in Study 1 and suffered from low reliabilities. These factors are likely to have led to the inability to replicate some of the patterns in the emotion-self link observed in Study 1. Finally, the asymmetric frequency of the recalled socially engaging and socially disengaging emotions in Study 2 also restricted us from having a greater insight into the self-emotion link in the currently studied context.

General Discussion

Although social psychological concepts have been examined in health related research for some time, relatively little attention has been paid to the role the self and identity plays in health and disease related phenomena (Kihlstrom & Kihlstrom, 1999). For their part, Contrada and Ashmore (1999) argued that there is an apparent disconnection between models of “self” regulation in health psychology and the treatment of “self” by psychologists interested in self

and social identity. There is, however, a growing interest in the exploration of self related processes in health related issues (e.g., Hardie, Kashima, & Pridmore, 2005; Haslam, Jetten, Postmes, & Haslam, 2009; Okazaki, 2000; Uskul & Oyserman, 2010). The two studies reported here examined a specific aspect of the self concept, namely the extent to which others are incorporated into the self, in relation to the kinds of emotions individuals may experience in the face of imagined and recalled physical health problems. Studies 1 and 2 showed that the collective self derived from one's social identities was associated with the experience of socially engaging emotions under both imagined and real physical health problems. In addition to having contributed to research on self and emotion research, we believe that the current findings have also raised some questions about applied consequences of endorsing different self-aspects in health settings. **Future research focusing on specific cultural groups could inform us about the potential cultural variability of the type of recalled emotions and how they are predicted by the endorsement of different self-aspects.**

Implications for Applied Settings

The findings of Studies 1 and 2, that the collective self predicts the experience of socially engaging emotions such as guilt, shame, and embarrassment, suggests that some individuals, namely those whose self-definitions are derived from their memberships in in-groups or social categories, are more likely to experience health problems in terms of how this situation may impact social others and their relationships with them. This was indeed shown to be the case by Uskul and Hynie (2007), who found that it was the endorsement of collective self that was associated with the experience of social concerns, concerns that relate to how the health problem will impact significant others' lives or one's relationships with them.

Experiencing socially engaging emotions in the face of a health threat may be associated with different sets of health behaviors. It would be worth asking the question of

whether the experience of socially engaging emotions would constitute a stronger motivator to seek health care in the face of a health threat for individuals with a stronger collective self. If this is the case, communication related to health issues may choose to focus on how our relationships with significant others may be influenced by the health problem at hand, not complying with treatments, or not engaging in preventive action. On the positive side, emphasizing how seeking timely health care, complying with treatment, and taking preventive action may positively influence significant others and one's relationships with them could also be a more effective way of communicating with patients whose emotions about the health problem are shaped by their emphasis on in-groups and social category membership.

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Footnotes

- ¹ The positive emotions factor ($\alpha = .72$, $M = 3.68$, $SD = 1.11$) consisted of 5 emotions (see Table 1) and negatively correlated with socially disengaging emotion factor ($r = -.20$, $p = .001$) only.
- ² When all possible two-way interactions were entered in Step 2 and all possible three-way interactions were added in Step 3, no additional variance was explained.
- ³ Although we had no predictions for positive or neutral emotions, we also conducted a regression analysis with the emotion factor that included positive and neutral emotions. This regression revealed a significant R^2 at the end of step 1 only, $R^2_{\text{adj}} = .04$, $F_{\Delta}(5,263) = 3.11$, $p = .01$. The only significant predictor was collective self-aspect (RIC-C), $\beta = .17$, $t(263) = 2.39$, $p = .02$.
- ⁴ Participants wrote on a diverse set of health problems ranging from bronchitis to cancer. The diversity of health problems did not allow for a meaningful categorization in terms of type of health problem that could be treated as an additional factor in the analyses.
- ⁵ Participants completed both independent and interdependent subscales of Singelis' (1994) Self-Construal Scale. The interdependent subscale in this study had an unacceptable reliability coefficient and was found to have a multifactorial structure. Given that the scale was not measuring a clear construct that could be labelled as the 'interdependent self-construal', we decided to report the independent self-construal subscale only. However, when we included the interdependent subscale into our analyses, we found that the findings remained unchanged and that this variable was not a significant predictor.
- ⁶ Even though we recruited participants with health problems that lasted at least 2-3 days, two participants who wrote down a 1-day long health problem. They were not excluded from the sample since their inclusion or exclusion did not alter the results.

⁷ The positive emotions factor ($\alpha = .72$, $M = 3.44$, $SD = 1.27$) consisting of the emotions confident, hopeful, trusting, strong, and responsible (see Table 1) was only marginally negatively correlated with socially disengaging emotion factor ($r = -.20$, $p = .08$).

⁸ We referred to the reasons for the inclusion of the closed-ended emotions scale in this study in the description of this scale above. Having these scales included in this study gave us an opportunity to examine whether the observed pattern of findings in Study 1 can be replicated in a different sample and conducted similar regression analyses to those in Study 1. Unfortunately, however, we did not find that the Singelis independent self-construal subscale predicted socially disengaging emotions (as in Study 1 with the RIC-I) and that the collective self construal scale predicted socially engaging emotions (unlike the RIC-C in Study 1). The reasons for the lack of prediction may lie in the self-aspects scales used in this study. The reliability of the independent self-construal subscale was less than desired and the collective self-construal scale tapped primarily into the individuals' group related selves, as opposed to interrelated selves, which may have been less relevant in the context of the recalled health problems.

⁹ The regression analyses reported in this section were repeated controlling for duration, seriousness of the health problem, age, and having children. Since results remained the same with the inclusion of these demographic variables, we report the results of regressions that include the variables of interest only.

Table 1

Factor Analysis of Emotion Scale in Study 1 and Study 2 (Principal Axis Factoring, Orthogonal Rotations, Three Forced Factors)

Emotions	Emotion Factors					
	Socially-disengaging		Socially-engaging		Positive	
	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2
Disappointed	.71*	.48	.23	.24	-.10	-.24
Loss	.70	.75	.18	.23	-.07	-.21
Sad	.67	.58	.37	.09	-.13	-.17
Anxious	.66	.38	.22	.08	-.05	.08
Grieved	.65	.76	.30	.10	-.06	-.04
Frustrated***	.65	.17	.31	.13	-.11	-.41
Ashamed	.22	.28	.81	.93	-.04	-.13
Guilty	.19	.38	.76	.55	.02	-.12
Embarrassed	.32	.08	.69	.75	-.05	.06
Hopeful	-.02	-.17	-.22	-.02	.80	.64
Confident	-.23	.03	-.19	.01	.79	.74
Strong	-.11	-.07	-.18	-.06	.74	.56
Trusting	.13	-.14	-.11	.05	.61	.51
Responsible	-.06	.23	.27	-.04	.54	.47
<i>Weak**</i>	.44		.58		-.23	
<i>Incompetent</i>	.42		.66		-.18	
<i>Helpless</i>	.51		.50		-.22	
<i>Hopeless</i>	.46		.58		-.15	
<i>Angry</i>	.46		.53		-.05	
<i>Surprised</i>	.37		.03		.11	

*Emotions whose factor loadings presented in bold are those that are used to form the emotion indices used in analyses.

****The italicized emotions loaded either equally well on more than 1 factor or did not load satisfactorily high on any of the factors and were therefore not included in the emotion indices formed.

***** This emotion in Study 2 loaded equally well on more than 1 factor and was excluded from the emotion indices formed.

Table 2

Correlations between Emotions and Self-Aspect Subscales in Study 1

Variable	1	2	3	4	5	6
1 Socially-engaging emotions	-					
2 Socially-disengaging emotions	.53**	-				
3 RIC-I (Individual RIC)	.000	.13**	-			
4 RIC-R (Relational RIC)	.15*	.15*	.44**	-		
5 RIC-C (Collective RIC)	.23**	.10	.18**	.51**	-	
6 Interference ¹	.10	.08	.13*	.10	.004	-
7 Dependence ²	.15*	.14*	.03	-.02	-.01	-.14*

* $p < 0.05$, ** $p < 0.01$

¹ 0: low interference, 1: high interference

² 0: low dependence, 1: high dependence