

**Affect regulation strategies and their associations with subjective  
well-being:**

**An international comparative survey**

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This study examined the frequency of use and perceived efficacy of affect regulation strategies in the regulation of feelings in general and the regulation of sadness. Special attention was given to the use of environmental strategies. This perspective has often been neglected in earlier research on coping and affect regulation even though studies from other fields of psychology indicate that people do use the environment in self-regulation and the environment is known to have positive influences on mood, well-being and health. Data from different countries was compared to reveal cultural differences. The relationships between affect regulation and subjective well-being were also examined.

Participants from Australia, Finland, Germany, Italy, India, Portugal, Sweden, the Netherlands and Great Britain (N=507) evaluated the frequency of use and perceived efficacy of affect regulation strategies for feelings in general and participants from Australia, Finland, Germany, Italy, the Netherlands, Sweden Great Britain, USA and Denmark (N=626) for sadness using a modified version of the Measure of Affect Regulation Styles (MARS). Life satisfaction was measured using the Satisfaction with Life Scale (SWLS), emotional well-being was measured with items from RAND 36-Item Health Survey and perceived general health was measured using a single item.

Factor analysis produced four affect regulation categories depicting perspective-taking, environmental strategies, analysis and action oriented strategies and distraction. Multiple analysis of variance showed analysis and action oriented strategies to be the most frequently used and perceived to be the most effective in regulating feelings in general and sadness. Environmental strategies were usually the least used and perceived to be the least effective. There was slight variation in the results between countries and some strategies were used more frequently or perceived to be more effective in some countries than others. Perspective-taking strategies had the most positive associations with life-satisfaction, emotional well-being and health. The associations between diversionary strategies and measures of subjective well-being were consistently negative. The perceived efficacy of environmental strategies was positively related to satisfaction with life and perceived health. Some differences in these general trends were observed when analyzing regulation of feelings in general and sadness separately.

The results supported the inclusion of environmental means in the collection of affect regulation strategies. The results indicated that the regulation of sadness differs from the regulation of feelings in general. Future research should investigate the regulation of other specific emotions, such as anger. Future research should also address the question why some strategies are used more frequently and perceived to be more effective in some countries than others. Repeating the study using objective in addition to subjective measures of well-being and health would produce valuable additional information.

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# 1. INTRODUCTION

In the research literature concerning affect regulation and coping, several strategies that people use to regulate different negative and positive emotions have been identified. These strategies measured by coping inventories are usually and predominantly clustered as problem-focused, emotion-focused, meaning focused and social (Folkman & Moskowitz, 2004). From the point of view of environmental psychology it is surprising that the use of environmental strategies in self-regulation has largely been neglected in all major classifications and research. After all, self-regulation (and affect regulation as an integral part of it) can be seen as, by definition, interaction with the environment, not an intra-psychic process (Campos, Campos & Barrett, 1989). Moreover, the strategies of changing a bad mood and raising energy and alertness identified in earlier research include such behaviors as “changing location” and “going out to get some fresh air” (Thayer, Newman & McClain, 1994). Where people go to regulate mood and emotions has rarely been specified.

The purpose of this study is to get further information about affect regulation in general and environmental affect regulation in particular. The focus is on the frequency of use of different affect regulation strategies and their perceived effectiveness in influencing feelings. Special attention is given to how environmental regulation strategies compare to other strategies identified in earlier research. As the goal of affect regulation is to increase subjective well-being (Larsen & Prizmic, 2004) the relationships between affect regulation strategies and components of subjective well-being (life satisfaction, emotional well-being and perceived general health) are also examined.

Another aspect of affect regulation that has not gotten much research attention is possible cultural differences in the frequency of use and perceived efficacy of behaviors used to regulate emotions and mood. In this study, data from different countries is compared to reveal possible differences in affect regulation.

## **1.1. What is affect regulation?**

Self-regulation refers to control *by* the self and *of* the self to bring the self in line with preferred standards (Vohs & Baumeister, 2004). It encompasses purposive efforts people

make to control, direct and correct their actions while moving toward or away from various goals (Carver, 2001). Self-regulation is often distinguished from coping which consists of efforts made to master, reduce or tolerate external or internal demands in a stressful situation (Folkman, 1984). Affect regulation forms one important part of self-regulation. The terms “emotion regulation” and “mood regulation” are sometimes used but affect regulation is a broader concept, referring to the management of subjective feeling states in general. Most of the definitions of affect regulation include the idea of people taking action to maintain or change the intensity of affect or to influence the temporal duration of the affective episode. The goal of affect regulation is to achieve subjective well-being by increasing positive affect and decreasing negative affect (Larsen & Prizmic, 2004). A wide variety of behaviors used in affect regulation and different classification systems for those behaviors have been identified and studied in earlier research (see for example Larsen, 2000; Parkinson & Totterdell, 1999; Thayer, Newman & McClain, 1994).

## ***1.2 The environment in affect regulation***

According to the so-called environmental self-regulation hypothesis (Korpela, 1989), people use environmental strategies in self-regulation as well as psychological, physical and social strategies. The natural environment in particular can play an important role in people’s efforts to alleviate negative moods and strengthen or maintain positive moods. This assumption is based on the view of natural environments as restorative environments. Restoration can be defined as a process where a person’s depleted physical, psychological or social resources are renewed or restored (Hartig, 2004). A restorative environment is an environment that promotes this process.

There is plenty of empirical evidence of the restorative potential of natural environments and also of their positive effects on health, well-being and mood. In the study of Korpela et al. (2001) university students described their experiences in their favorite places. Restorative outcomes such as getting away, forgetting troubles and reflecting on personal matters were mentioned often. Natural environments were over-represented among favorite places. Natural settings, such as parks, beaches or forests have formed the largest category (50%-63%) among adults’ favorite places in studies from Finland, Ireland, Senegal, USA and the UK (Evans et al., 2005; Gross & Lane, 2007; Guwaldi, 2006; Jorgensen et al., 2007; Korpela, 1992; Korpela & Hartig, 1996; Korpela et al, 2001; Newell, 1997; Regan &

Horn, 2005; Smaldone et al., 2005). Nature has been found to have positive effects on people's moods and emotional states (Hartig et al., 2003; Hartig et al., 1999; van den Berg et al., 2003). The proximity of green areas is associated with experiencing less stress (Nielsen & Hansen, 2007). Restoration does not only occur in natural environments, however: Scopelliti and Giuliani (2004) found that also certain built environments can be experienced as restorative.

### ***1.3 Frequency of use of different affect regulation strategies***

A few studies have tackled the issue of how frequently people use different affect regulation strategies. In Totterdell and Parkinson's (1999) field study on a group of trainee teachers cognitive distraction, rationalization, pleasant or relaxing activities and social support were the most frequently used strategies during a two-week period. The advantage of Totterdell and Parkinson's study is that it examines how often people actually use different strategies in influencing their moods and not just peoples own perceptions of the frequency of use. In the study of Thayer, Newman and McClain (1994) people were asked to indicate the most common way of changing a bad mood. The behaviors used most frequently were calling, talking to or being with someone, controlling thoughts, listening to music and avoiding the person or thing causing the bad mood. Changing location was also often mentioned as a way to influence bad mood but it was not specified where people went in these situations. This study aims to shed further light on people's perceptions of frequency of use as well as the question of perceived efficacy of different affect regulation strategies which will be discussed in the next chapter.

### ***1.4 Efficacy of affect regulation strategies***

The efficacy of affect regulation strategies is another issue that needs further examination. In earlier research people have listed exercise, listening to music and calling to or being with someone as the most successful strategies for raising a bad mood (Thayer et al., 1994). According to the judgments of mental health professionals, the most effective strategies are active mood management (including such behaviors as exercise, stress management activities

and putting feelings in perspective) and seeking pleasurable activities and distraction (for example engaging in pleasant activities, listening to music and changing location) (Thayer et al., 1994). The problem with asking people for their own evaluation on the efficacy of different strategies is that self-ratings might be prone to personal bias. In Totterdell and Parkinson's study (1999) half of the participants were instructed to use engagement strategies (rationalization, reappraisal, social support, venting) and the other half was instructed to use diversionary strategies (pleasant or relaxing activities, active or energetic activities, cognitive distraction, cognitive avoidance). Both types of strategies were associated with increases in cheerfulness and calmness but only engagement strategies were associated with increases in energy. Doing something distracting and cognitive reappraisal of the mood or situation were associated with the biggest improvements in mood. Venting, on the other hand, was negatively associated with cheerfulness. Avoidance was also found to be ineffective.

Along with avoidance, withdrawal, isolation and spending time alone are thought to be rather ineffective in alleviating negative affect compared to more problem-focused approaches. For example, in their study on depressive styles and the regulation of negative affect, Fichman et al. (1999) found that spending time alone correlated with self-criticism, a component of a depressive personality style. However, some studies suggest that emotion-focused strategies (such as avoidance or resignation) might be useful in situations where individuals do not have the ability to change the situation causing negative consequences (Bhagat, Allie & Ford, 1995; Bonanno, Holen, Keltner & Horowitz, 1995). Also, from the point of view of environmental psychology, it is hardly irrelevant where a person withdraws to (see chapter 1.2 on environmental self-regulation).

Hartig (2005) raises the question of how do people cope with feelings of sadness and what role might the environment play in this process. The environment may be important because sadness is an emotion that often includes feelings of hopelessness and causes people to withdraw and isolate (Shaver et al., 1987). A sad person often sees his power to change the situation causing the sadness as diminished and might thus be prone to use more emotion-focused strategies. Affect regulation and the restoration process with relation to specific emotional states is a relatively new area of interest within research. In this study, the frequency of use and perceived effectiveness of different affect regulation strategies with regards to feelings of sadness is examined.

## ***1.5 Affect regulation, subjective well-being and health***

Diener (2000) lists life satisfaction, positive affect and low levels of negative affect as the main components of subjective well-being. The purpose of affect regulation is to increase positive affect and decrease negative affect and thus the logical outcome of successful affect regulation is increased subjective well-being. Haga, Kraft and Corby (2009) conducted a cross-cultural study (including participants from Norway, Australia and USA) on the antecedents and well-being outcomes of two emotion regulation strategies, cognitive reappraisal and expressive suppression. They found increased use of cognitive reappraisal to predict higher levels of positive well-being outcomes while increased use of expressive suppression predicted higher levels of negative well-being outcomes. More specifically, cognitive reappraisal correlated positively with positive affect and negatively with negative affect while the opposite was true for expressive suppression. The correlation between cognitive reappraisal and life satisfaction was positive and the correlation between cognitive reappraisal and depressed mood was negative. Suppression correlated negatively with life satisfaction and positively with depressed mood. The relationships between the two coping mechanisms and the well-being outcomes were generally similar across cultures.

Psychological and physical health are also components of well-being. In their meta-analyses on the relationships between coping and health, Penley, Tomaka and Wiebe (2002) found that problem-focused coping correlated positively with overall health outcomes. Confrontive coping, distancing, self-control, seeking social support, accepting responsibility, avoidance and wishful thinking correlated negatively with overall health outcomes but there were differences in the associations with psychological and physical health. Confrontive coping, accepting responsibility, escape avoidance, positive reappraisal and wishful thinking all correlated negatively with psychological health outcomes but there was no significant correlation with physical health outcomes. In their study on first year medical students, Park and Adler (2003) found that both problem-focused coping and approach emotion-focused coping were associated with less deterioration in physical health. Escape avoidance correlated positively with lower levels of psychological well-being whereas positive reappraisal and planful problem solving correlated positively with higher levels of psychological well-being. Only escape avoidance was marginally negatively correlated with physical health. Planful problem solving and positive reappraisal predicted lesser deterioration in physical health during the year. Griffin et al. (2001) found venting emotions to be related to a more severe

disease status in patients with rheumatoid arthritis. Reliance on avoidant coping strategies has been found to be associated with higher levels of anxiety and depression (Stewart et al., 1997). Using the environment in affect regulation may also increase well-being. For example, visiting natural favorite places is associated with perceived health (Korpela & Ylén, 2007).

## **1.6 Research questions**

Based on existing theory and earlier research findings outlined in this introduction, the following research questions were posed:

Research questions:

1. Does environmental regulation form a separate strategy of affect regulation? What are the other strategies and do the strategies differ in different countries?
2. Which affect regulation strategies are a) used most frequently and b) perceived to be the most effective?
3. What are the relationships between affect regulation strategies and satisfaction with life, emotional well-being and perceived general health?

In part, the research questions test the environmental self-regulation hypothesis (Korpela, 1989) which states that in addition to psychological, physical and social strategies, people use environmental strategies in self-regulation. Results indicating that the environmental strategies do in fact form their own independent subcategory and showing links between the environment and well-being would lend support to the hypothesis. Alternatively, environmental items could also logically load to factors describing e.g. distraction, exercise or withdrawal. This would speak against the environmental self-regulation hypothesis and would rather show that the choice of environments combines with other, more primary regulation strategies. All of the research questions will be addressed with regards to both regulation of feelings in general and regulation of sadness to reveal possible differences between them. Analyses will also be carried out by country to examine cultural differences.

## **2. METHOD**

### ***2.1 Procedure***

A request to participate in the study was sent to staff colleagues at universities in Australia, Denmark, Germany, Great Britain, Italy, India, the Netherlands, Portugal, Sweden and USA. The majority of respondents were recruited during lectures or via e-mail lists for students. Voluntary participants filled in an internet-based questionnaire concerning either the regulation strategies for feelings in general (appendix A) or the regulation of sadness in particular (appendix B). Each questionnaire took about 15 minutes to complete. For background information the respondents were asked to state their age, nationality, country of residence, occupation and average income per year. The questionnaires contained a measure of affect regulation strategies and measures of subjective well-being and health. The participants received no credit or monetary compensation for their participation.

### ***2.2 Participants***

Tables 1a and 1b describe the participants for the two internet-based questionnaires by country of residence, gender and age. The first table includes participants who evaluated their affect regulation strategies in general and the second includes those who evaluated their affect regulation strategies with regards to regulation of sadness in particular.

**Table 1a. Descriptives of study participants (regulation of feelings in general).**

	Total	Men	Women	<25 years	>25 years
	N	N	N	N	N
	%	%	%	%	%
Australia	85	4	81	33	52
	16.8	4.7	95.3	38.8	61.2
Finland	54	11	43	25	29
	10.7	20.4	79.6	46.3	53.4
Germany	32	6	26	26	6
	6.3	18.8	81.2	81.2	18.8
India	66	36	30	50	16
	13.0	54.5	45.5	75.8	24.2
Italy	51	23	28	32	19
	10.1	45.1	54.9	62.7	37.3
Netherlands	73	16	57	63	10
	14.4	21.9	79.1	86.1	13.9
Portugal	22	6	16	19	3
	4.3	27.3	72.7	86.4	13.6
Sweden	84	26	58	51	33
	16.6	31.0	69.0	60.7	39.3
Great Britain	40	7	33	21	19
	7.9	17.5	82.5	52.5	47.5
<b>Total</b>	<b>507</b>	<b>135</b>	<b>372</b>	<b>320</b>	<b>187</b>
<b>sample</b>	<b>100</b>	<b>26.6</b>	<b>73.4</b>	<b>63.0</b>	<b>37.0</b>

**Table 1a. Descriptives of study participants (regulation of sadness).**

	Total	Men	Women	<25 years	>25 years
	N	N	N	N	N
	%	%	%	%	%
Australia	56	9	47	24	32
	8.9	16.1	83.9	42.9	57.1
Finland	128	16	112	99	29
	20.4	12.5	87.5	77.3	22.7
Germany	34	2	32	30	4
	5.4	5.9	94.1	88.2	11.8
Italy	81	44	37	38	43
	12.9	54.3	45.7	46.9	53.1
Netherlands	69	13	56	68	1
	11.0	18.8	81.2	98.6	1.4
Sweden	147	49	98	96	51
	23.5	33.3	66.7	65.3	34.7
Great Britain	35	5	30	31	4
	5.6	14.3	85.7	88.6	11.4
USA	50	17	33	46	4
	8.0	34.0	66.0	92.0	8.0
Denmark	26	7	19	12	14
	4.2	26.9	73.1	46.2	53.8
<b>Total</b>	<b>626</b>	<b>162</b>	<b>464</b>	<b>444</b>	<b>182</b>
<b>sample</b>	<b>100</b>	<b>25.9</b>	<b>74.1</b>	<b>71.0</b>	<b>29.0</b>

A total of 507 participants (372 women and 135 men) from Australia, Finland, Germany, Italy, India, Portugal, Sweden, the Netherlands and Great Britain completed the questionnaire inquiring about the regulation of feelings in general. For the second questionnaire, concerned with the regulation of sadness, the total number of participants was 626 (464 women and 162 men). The respondents were from Australia, Finland, Germany, Italy, the Netherlands, Sweden Great Britain, USA and Denmark.

A majority of respondents were students, aged under 25 and with a low to average income level. The age range of the respondents was 17-57 years for the feelings in general questionnaire and 16-60 years for the sadness questionnaire. For the feelings in general questionnaire the age ranges by country were as follows: Australia 17-57 years, Finland 19-33 years, Germany 18-52 years, Italy 18-34 years, India 18-30 years, Portugal 20-39 years, Sweden 19-50 years, the Netherlands 18-34 years and Great Britain 19-57 years. For the regulation of sadness questionnaire the age ranges were: Australia 17-60 years, Finland 19-54 years, Germany 16-44 years, Italy 19-56 years, the Netherlands 17-29 years, Sweden 19-45 years, Great Britain 18-43 years, USA 19-38 years and Denmark 21-45 years.

## **2.3 Measures**

### **2.3.1 Affect regulation strategies**

The data was collected using a modified version of MARS (Measure of Affect Regulation Styles; Larsen & Prizmic, 2004). This self-report measure includes a comprehensive list of 32 strategies that can be divided into 13 subcategories of affect regulation. These categories (with examples of each) are as follows:

1) Distraction, getting one's mind off negative events or emotions, avoiding rumination

*I watched TV, read a book, etc., for distraction.*

2) Venting, expressing the negative affect, catharsis

*I let my feelings out by venting or expressing them.*

3) Suppression, keeping the negative affect from being expressed

*I tried to not let my feelings show, to suppress any expression.*

4) Cognitive reappraisal, finding meaning in negative events

*I tried to find something good in the situation.*

5) Downward social comparison

*I compared myself to people who are worse off.*

6) Problem-directed action or planning to avoid problems in the future

*I took action to solve the problem causing my mood.*

7) Self-reward, thinking about or doing pleasant activities

*I did something fun, something I really enjoy.*

8) Exercise, relaxation, eating, and other physical manipulations

*I played sports, exercised.*

9) Socializing, seeking comfort, help, or advice from others

*I talked to an advisor or mentor.*

10) Withdrawal, isolation, spending time alone

*I kept to myself, I wanted to be alone.*

11) Gratitude, counting one's blessings, of focusing on areas of life that are going well

*I tried to think about those things that are going well for me.*

12) Helping others, committing acts of kindness

*I went out of my way to help someone.*

13) Humor, laughter, expressing positive emotions

*I laughed, joked around, tried to make myself or others laugh.*

For the purpose of this study, four items measuring the environmental strategy were added to the existing list. Two of the items were related to regulation in natural environments and two to regulation in urban environments. One of the natural environment items and one of the urban environment items was specifically about affect regulation in a favorite place. The additional statements were:

“I went to my favorite place in nature”

“I went for a walk in the forest, in a park, on the beach or some other natural setting.”

“I went to my favorite place in an urban setting.”

“I took a walk downtown.”

In the MARS questionnaire the respondents are asked to indicate how frequently they use each behavior to influence their feelings, either to increase positive moods or to decrease negative moods, using a Likert scale ranging from 0 (not at all) to 6 (almost always). In this study the respondents were also asked to evaluate the efficacy of each behavior using the

same scale. The latest version of MARS used in this study is based on an organizing scheme of several studies on regulation strategies (Larsen, 2000). Earlier studies have used a somewhat shorter version (11 strategies) showing reliable relationships to negative affect, self-criticism and dependency (Fichman et al., 1999).

### **2.3.2 Subjective well-being**

In addition to background information and MARS the respondents were asked to answer questions concerning their satisfaction with life, emotional well-being and health. Satisfaction with life was measured using the Satisfaction With Life Scale (SWLS; Diener et al., 1985). The respondent is asked to indicate his/her agreement with five statements using a 7-point Likert scale (1=strongly disagree, 7=strongly agree). The five items include statements such as “the conditions of my life are excellent”. SWLS has been shown to be a valid and reliable measure of life satisfaction (Pavot and Diener, 1993; Diener et al., 1985).

Emotional well-being during the past four weeks was measured using five items from the RAND 36-Item Health Survey (Aalto et al., 1995). The five items included questions like “How much of the time during the past four weeks have you been a very nervous person?”. These items reflect the concept of negative affectivity, a pervasive mood disposition that reflects individual differences in the tendency to experience negative emotions (Watson & Clark, 1984). High-NA individuals are more likely to be worried, nervous and anxious even in the absence of overt stress than low-NA individuals. They are also more likely to dwell on negative events, have a negative view of themselves and the world and consequently be less satisfied with their lives. Negative affectivity has been found to correlate with health complaints but not with objective health measures (Watson & Pennebaker, 1989). Several studies support the reliability and validity of RAND (Aalto et al., 1999; Bullinger, 1995; Garrat et al., 1993; McHorney et al., 1994; Sullivan et al., 1995). Perceived general health was measured by a single question “How is your health at the moment?” with response alternatives ranging from 1 (poor) to 5 (excellent) (Bronzaft, Ahern, McGinn, O’Connor & Savino, 1998).

## **2.4 Analytical strategy**

The first step in analyzing the data was to conduct factor analyses in order to find out whether the factor structure of the current data corresponded with the original subcategories of MARS and to reveal possible differences between countries. Next, multiple analyses of variance (MANOVA) were used to reveal differences between countries in the frequency of use and perceived efficacy of different affect regulation strategies both for feelings in general and sadness. The associations between affect regulation and subjective well-being were examined using linear regression.

## **3. RESULTS**

### ***3.1 Factor analysis of affect regulation strategies***

Factor analysis was used to examine what kinds of categories of affect regulation strategies could be found in the current data. Although the Kolmogorov-Smirnoff –test indicated that the affect regulation variables were not normally distributed, the inspection of skewness and kurtosis values showed the distributions to be fairly symmetrical. Visual inspection of scatter plots indicated that the relationships were linear. The inspection of the Kaiser-Mayer-Olkin Measure of Sampling Adequacy (KMO) supported the use of factor analysis (KMO > .60; Tabachnik & Fidell, 2007). Factor analysis was thus thought to be a justifiable method to use for this data. The data were analyzed using principal axis factoring, with Varimax rotation. Factor analyses were performed separately for each country to expose possible cultural differences. The analyses were also made separately for the regulation of sadness data and the regulation of feelings in general data as well as for the frequency of use of different regulation strategies and the efficacy evaluations to see whether differences would emerge.

#### **3.1.1 Factor solutions for total samples**

First, exploratory factor analyses (principal axis factoring, Varimax rotation) for both the frequency of use and perceived efficacy of the strategies for **sadness** regulation for the total

sample was performed because the sample sizes per country were quite small (max.  $n = 147$ ). The total sample size ( $N = 625$ ) conforms with the rule of thumb of at least 300 cases for factor analysis (Tabachnick & Fidell, 2007).

Inspection of communalities for frequency of use indicated that eight strategy variables could be excluded from the first analysis (using the criterion  $h^2 \leq .32 \sim 10\%$  explained variance; Tabachnick & Fidell, 2007). These variables were “I ate something to get over my bad mood”, “I wrote about my feelings in a diary, letter or e-mail”, “I drank coffee or caffeinated beverages”, “I used alcohol to get out of a bad mood”, “I talked to an advisor or mentor”, “I tried to accept it as my faith, what will be, will be”, “I played sports, exercised”, “I slept or took a nap” and “I daydreamed of the time when I will not have this problem”. Five factors had eigenvalues  $> 1$  after extraction. Inspection of the scree plot supported a five factor solution. For perceived efficacy, seven variables were excluded based on low communalities: “I wrote about my feelings in a diary, letter or e-mail”, “I used alcohol to get out of a bad mood”, “I talked to an advisor or mentor”, “I tried to accept it as my faith, what will be, will be”, “I treated myself to something special”, “I slept or took a nap” and “I daydreamed of the time when I will not have this problem”. The scree plot indicated a four factor solution.

The factor solutions for frequency of use and perceived efficacy of strategies for sadness regulation were very similar. Both analyses produced factors relating to focusing on positive aspects and perspective-taking (‘Perspective’), using the natural or urban environment as means for sadness regulation (‘Environment’), analyzing the situation or taking active measures to change it (‘Analysis/Action’) and seeking distraction or having fun (‘Distraction/Fun’), in different order. The fifth factor to be extracted from the frequency of use data was one relating to withdrawal and suppression of emotional expression (‘Withdrawal’). (Table 2.1 and Table 2.2).

Similar analyses were carried out with the frequency of use and efficacy of the strategies for **affect regulation in general** for the total sample ( $N = 506$ ). For frequency of use, seven variables did not meet the criterion for adequate communalities. These variables were “I wrote about my feelings in a diary, letter or e-mail”, “I withdrew from or avoided the situation”, “I drank coffee or caffeinated beverages”, “I used alcohol to get out of a bad mood”, “I talked to an advisor or mentor”, “I slept or took a nap” and “I daydreamed of the time when I will not have this problem”. Six factors had eigenvalues  $> 1$  after extraction and the scree plot supported a six factor solution. In the analysis of perceived efficacy of strategies for affect regulation in general, 11 variables had communalities below the criterion:

“I ate something to get over my bad mood”, “I wrote about my feelings in a diary, letter or e-mail”, “I withdrew from or avoided the situation”, “I drank coffee or caffeinated beverages”, “I used alcohol to get out of a bad mood”, “I talked to an advisor or mentor”, “I kept to myself, I wanted to be alone”, “I compared myself to people who are worse off”, “I played sports, exercised”, “I slept or took a nap” and “I daydreamed of the time when I will not have this problem”. The scree plot indicated four factors.

The factor solutions for the regulation of feelings in general were similar but not identical to those for the regulation of sadness. For frequency of use, the first factor to be extracted related to concentrating on good sides and perspective-taking (‘Perspective’). The second factor to be extracted in both analyses was a place-use factor (‘Environment’). The third factor for frequency of use had to do with expression of emotion (‘Expression’). The fourth factor only included two variables with communalities above the criterion (“I ate something to get out of a bad mood” and “I kept to myself, I wanted to be alone”). This factor was left out because a factor consisting of only two variables can be considered "hazardous under even the most exploratory factor analysis" (Tabachnick & Fidell, 2007, p. 646). The fifth factor was an ‘Analysis/Action’ factor similar to the ones extracted in the analyses of the regulation of sadness data. The sixth factor had to do with having fun and altruism (‘Fun’). For perceived efficacy the first factor was an ‘Analysis/Action’ factor. The third factor to be extracted from the analysis of perceived efficacy also included only two variables (I tried to not let my feelings show, to suppress any expression” and “I watched TV, read a book, etc., for distraction”) and was thus excluded. The fourth factor had to do with seeking distraction and having fun (‘Distraction/Fun’). A summary of the factors produced by the analyses for total sample can be seen in tables 2.1 and 2.2.

**Table 2.1.** Factors of regulation of sadness and feelings in general for the total sample (frequency of use).

	Regulation of sadness					Regulation of feelings in general						
	F1	F2	F3	F4	F5	h <sup>2</sup>	F1	F2	F3	F4	F5	h <sup>2</sup>
I tried to be grateful for the things in my life that are going well.	.691					.590	.615					.615
I tried to put things in perspective.	.562					.573	.614			.374		.567
I tried to think about those things that are going well for me.	.782					.738	.760					.729
I compared myself to people who are worse off.	.577					.385	.449					.308
I tried to find something good in the situation.	.658					.636	.651					.597
I went to my favourite place in nature.		.732				.601		.751				.626
I went for a walk in the forest, in a park, on the beach or some other natural setting.		.849				.764		.766				.633
I went for a walk downtown.		.540				.383		.519				.453
I went to my favourite place in an urban setting.		.477				.375		.550				.492
I withdrew from or avoided the situation			.600			.409						
I tried to not let my feelings show, to avoid any expression			.462			.481			-.491			.463
I watched TV, read a book, etc., for distraction.			.401			.349						
I kept to myself, I wanted to be alone.			.581			.516			-.346			.318
I took action to solve the problem causing my mood.				.564		.479				.493		.358
I tried to understand my feelings by thinking and analyzing them.				.584		.513				.563		.437
I made plans or a resolution to avoid such problems in the future.				.600		.419				.576		.432
I tried to reinterpret the situation, to find a different meaning.				.329		.500	.448			.341		.395
I thought about something to distract myself from my feelings.					.642	.516						.420
I worked on something or stayed busy to forget my mood.					.487	.385						.377
I laughed, joked around, tried to make myself or others laugh.					.344	.321	.311				.566	.506
I did something fun, something I really enjoy.						.636					.397	.452
I went out of my way to help someone.											.576	.587
I talked to someone about my feelings.									.641			.497
I let my feelings out by venting or expressing them.									.647			
Eigenvalue	2.901	2.264	2.002	1.756	1.602		2.775	2.412	1.654	1.468	1.171	
% of variance	8.059	6.288	5.561	4.878	4.451		7.708	6.699	4.595	4.079	3.253	
$\alpha$	.827	.610	.756	.714	.605		.818	.765	.619	.627	.671	

F1: Perspective  
F2: Environment  
F3: Withdrawal  
F4: Analysis/Action  
F5: Distraction/Fun

F1: Perspective  
F2: Environment  
F3: Expression  
F4: Analysis/Action  
F5: Fun

**Table 2.2** Factors of regulation of sadness and feelings in general for the total sample (perceived efficacy).

	Regulation of sadness					Regulation of feelings in general			
	F1	F2	F3	F4	h <sup>2</sup>	F1	F2	F3	h <sup>2</sup>
I tried to be grateful for the things in my life that are going well.	.702				.597				
I tried to put things in perspective.	.589	.511			.641	.608			.510
I tried to think about those things that are going well for me.	.787				.730	.454			.701
I compared myself to people who are worse off.	.609				.434				
I tried to find something good in the situation.	.664	.341			.628	.604			.626
I took action to solve the problem causing my mood.		.621			.523	.499			.404
I tried to understand my feelings by thinking and analyzing them.		.755			.666	.708			.551
I made plans or a resolution to avoid such problems in the future.		.610			.464	.534			.352
I tried to reinterpret the situation, to find a different meaning.	.453	.421			.501	.624			.516
I thought about something to distract myself from my feelings.			.628		.549			.400	.402
I worked on something or stayed busy to forget my mood.			.476		.470			.356	.363
I watched TV, read a book, etc., for distraction.			.584		.534				.356
I laughed, joked around, tried to make myself or others laugh.			.389		.562			.608	.519
I did something fun, something I really enjoy.			.540		.513			.669	.554
I socialized to forget my mood.								.450	.431
I treated myself to something special.								.405	.300
I went to my favourite place in nature.				.522	.581		.741		.639
I went for a walk in the forest, in a park, on the beach or some other natural setting.				.497	.714		.798		.739
I went for a walk downtown.				.752	.650		.629		.646
I went to my favourite place in an urban setting.				.729	.729		.621		.556
Eigenvalue	3.668	2.259	1.989	1.945		3.135	2.659	2.181	
% of variance	10.188	6.275	5.525	5.403		8.707	7.386	6.058	
$\alpha$	.807	.662	.698	.756		.748	.765	.642	

F1: Perspective  
F2: Analysis/Action  
F3: Distraction/Fun  
F4: Environment

F1: Analysis/Action  
F2: Environment  
F3: Distraction/Fun

### 3.1.2 Factor solutions by country

The next step was to carry out factor analyses by country using only the largest samples available (N= 66-146) to check whether the environmental factor would reliably appear in the analyses and to reveal possible cultural differences in the factor structure. First, factor analyses were conducted for each country for the data concerning the regulation on sadness. The analyses were performed separately for the frequency of use and perceived efficacy variables. Based on the inspection of the Kaiser-Mayer-Olkin Measure of Sampling Adequacy (KMO), factor analysis was reasonable in four countries (KMO > 0.60). These countries were Finland, Sweden, the Netherlands and Italy. Second, the same types of analyses were carried out for the data concerning the regulation of feelings in general. For this data, four countries met the standard: Australia, India, Sweden and the Netherlands. There was some variation in the results but a similar set of four factors were extracted in almost all of the analyses. These factors also corresponded with the factors extracted in the analyses for total sample. The sum variables based on these factors had relatively high Cronbach's Alphas (Tables 3.1, 3.2, 3.3 and 3.4). Based on these findings we were confident enough to use these four factors as a basis for further examination of the data.

The first factor that could be found in almost all of the analyses by country included five affect regulation items which represent gratitude, putting things in perspective and focusing on positive aspects. The variables were "I tried to be grateful for the things in my life that are going well", "I tried to put things in perspective", "I tried to think about those things that are going well for me", "I compared myself to people who are worse off" and "I tried to find something good in the situation". These statements correspond with two of the original subcategories of MARS: gratitude, counting one's blessings, or focusing on areas of life that are going well and downward social comparison. A similar factor was found in three of the analyses conducted on the total sample. All the strategies in the first factor depict behaviors where a person evaluates the situation by comparing it with either other aspects of his/her life or the situation or with other people. In other words, they are all forms of perspective-taking. Thus, the first factor was labeled 'Perspective'.

The second factor, labeled 'Environment', included the four environmental strategies that were added to MARS for the purposes of this study: "I went to my favorite place in nature", "I went for a walk downtown", "I went to my favorite place in an urban setting" and "I went for a walk in the forest, in a park, on the beach or some other natural setting". The

environment was not included in the original MARS categories. This factor was found in all of the total sample analyses. The third factor was labeled 'Distraction' and it included the following strategies: "I worked on something or stayed busy to forget my mood", "I thought about something to distract myself from my feelings" and "I watched TV, read a book, etc., for distraction". In the original MARS categorization, these strategies represent the subcategory of distraction, getting one's mind off negative events or emotions, avoiding rumination. There were three factors relating to distraction in the total sample analyses.

The fourth factor had to do with analyzing the situation and taking active measures to change it. The statements included in this 'Analysis / Action' factor were "I took action to solve the problem causing my mood", "I tried to understand my feelings by thinking and analyzing them", "I made plans or a resolution to avoid such problems in the future" and "I tried to reinterpret the situation, to find a different meaning". In MARS these strategies represent the subcategories of cognitive reappraisal and problem-directed action or planning to avoid problems in the future. The analysis/action factor was found in the total sample analysis of the efficacy of use of regulation strategies for feelings in general.

Loadings of variables on the extracted factors, communalities, eigenvalues, percents of variance and Cronbach's Alpha figures for the four different sets of data can be seen in tables 3.1-3.4.

**Table 3.1** Factors by country for the regulation of sadness (frequency of use).

	FINLAND					SWEDEN					NETHERLANDS					ITALY					
	F1	F2	F3	F4	h <sup>2</sup>	F1	F2	F3*	F4	h <sup>2</sup>	F1	F2	F3	F4	h <sup>2</sup>	F1	F2	F3	F4	h <sup>2</sup>	
I tried to be grateful for the things in my life that are going well.	.792				.708	.790				.751	x				.864	.557				.414	.559
I tried to put things in perspective.	.611			.436	.657	.534			.408	.593	x		.498	.596	.468					.697	.826
I tried to think about those things that are going well for me.	.928				.977	.734			.309	.738	x		.393	.737	.755						.744
I compared myself to people who are worse off.	.550				.399	.517				.495	x				.732	.624					.465
I tried to find something good in the situation.	.521				.646	.615				.630	x		.320	.820	.796						.773
I went to my favourite place in nature.		.795			.682		.786			.683		.794			.754		.698				.648
I went for a walk in the forest, in a park, on the beach or some other natural setting.		.862			.790		.812			.715		.923			.899		.793				.726
I went for a walk downtown.		.537			.478		.455			.490		x**			.873		.465				.513
I went to my favourite place in an urban setting.		.314			.339		x			.694		x**			.479		.672				.633
I worked on something or stayed busy to forget my mood.			.802		.694			.595		.512			x		.668	.384	.446	x			.599
I thought about something to distract myself from my feelings.			.563		.440			.484		.596			x		.507				x		.675
I watched TV, read a book, etc., for distraction.			.331		.477			x		.474			x		.693				x		.637
I took action to solve the problem causing my mood.	.328			x	.676	.336			.668	.664				x	.652						.589
I tried to understand my feelings by thinking and analyzing them.					.681	.525			.460	.480				.573	.443						.743
I made plans or a resolution to avoid such problems in the future.	.340				.345	.384			.625	.603				.562	.467						.697
I tried to reinterpret the situation, to find a different meaning.					.379	.419			x	.574				.544	.759						.552
Eigenvalue	3.357	2.656	1.672	1.368		3.252	2.074	2.084	1.651		x	2.514	x	2.030		3.322	2.384	x			3.228
% of variance	9.324	7.378	4.644	3.799		9.034	5.760	5.789	4.586		x	6.985	x	5.638		9.226	6.624	x			8.967
$\alpha$	.831	.743	.669	.557		.819	.721	.563	.692		.825	.770	.583	.556		.825	.755	.512			.786

F1 Perspective  
 F2 Environment  
 F3 Distraction  
 F4 Analysis/Action

x: the item did not load on the expected factor

\* The factor included additional variables.

Sweden F3: "I socialized to forget my mood" (.672, h<sup>2</sup>= .580)

\*\* The regulation strategies related to urban environments formed a separate factor with loadings .795 and .534.

**Table 3.2** Factors by country for the regulation of sadness (perceived efficacy).

	FINLAND					SWEDEN					NETHERLANDS					ITALY					
	F1	F2	F3*	F4	h <sup>2</sup>	F1	F2*	F3	F4	h <sup>2</sup>	F1	F2	F3*	F4	h <sup>2</sup>	F1*	F2	F3*	F4	h <sup>2</sup>	
I tried to be grateful for the things in my life that are going well.	.666				.639	.793				.758	.707				.655	.471					.655
I tried to put things in perspective.	.459			.595	.694	.713			.300	.682	.789				.740	.885					.835
I tried to think about those things that are going well for me.	.882				.860	.770				.707	.801				.707	.670					.670
I compared myself to people who are worse off.	.698				.542	.460				.500	.489				.489	x					.771
I tried to find something good in the situation.	.588			.449	.683	.565				.606	.727				.628	.676					.802
I went to my favourite place in nature.		.819			.716		.491			.506		.874			.887	.354	.617				.575
I went for a walk in the forest, in a park, on the beach or some other natural setting.		.901			.868		.725			.743		.785			.752	.416	.714				.712
I went for a walk downtown.		.553			.499		x**			.710		.662			.724		.760				.655
I went to my favourite place in an urban setting.		.553			.442		x**			.543		.798			.691		.770				.656
I worked on something or stayed busy to forget my mood.			.630		.575			x		.573			.582		.613	.388		.415			.549
I thought about something to distract myself from my feelings.			.751		.649			x		.672			.698		.754			.875			.872
I watched TV, read a book, etc., for distraction.			.552		.413			x		.504			.422		.606		.342	.548			.574
I took action to solve the problem causing my mood.				.572	.472				.584	.551	.542			x	.494	.763				x	.701
I tried to understand my feelings by thinking and analyzing them.				.757	.608	.334			.654	.638	.795			x	.676	.847				x	.772
I made plans or a resolution to avoid such problems in the future.				.599	.522				.884	.834	.463			x	.420	.785				x	.677
I tried to reinterpret the situation, to find a different meaning.				.552	.442	.448			x	.676	.673			x	.699	.783				x	.704
Eigenvalue	2.920	3.296	3.126	2.997		3.436	1.657	x	2.124		5.417	3.341	2.931	x		6.508	2.988	2.720		x	
% of variance	8.112	9.154	8.638	8.325		9.545	4.604	x	5.901		15.046	9.281	8.145	x		18.077	8.301	7.556			
$\alpha$	.868	.817	.681	.762		.850	.757	.645	.765		.858	.861	.737	.771		.839	.839	.774		.881	

F1 Perspective  
 F2 Environment  
 F3 Distraction  
 F4 Analysis/Action

x: the item did not load on the expected factor

\* The factor included additional variables.

Finland F3: "I withdrew from or avoided the situation." (.701, h<sup>2</sup>= .646), "I tried to not let my feelings show, to suppress any expression." (.638, h<sup>2</sup>= .504)

Sweden F2: "I played sports, exercised." (.581, h<sup>2</sup>= .553)

Netherlands F3: "I did something fun, something I really enjoy." (.583, h<sup>2</sup>=), "I played sports, exercised." (.569, h<sup>2</sup>=), "I slept or took a nap." (.505, h<sup>2</sup>= .574)

Italy F1: "I treated myself to something special." (.631, h<sup>2</sup>= .655)

Italy F3: "I did something fun, something I really enjoy." (.581, h<sup>2</sup>= .555), "I daydreamed of the time when I will not have this problem." (.567, h<sup>2</sup>= .506)

\*\* The regulation strategies related to urban environments formed a separate factor (loadings .728 and .691).

**Table 3.3** Factors by country for the regulation of feelings in general (frequency of use).

	AUSTRALIA					INDIA					NETHERLANDS					SWEDEN					
	F1	F2	F3	F4	h <sup>2</sup>	F1	F2	F3	F4	h <sup>2</sup>	F1*	F2*	F3	F4	h <sup>2</sup>	F1*	F2*	F3*	F4	h <sup>2</sup>	
I tried to be grateful for the things in my life that are going well.	.752				.746	x				.369	.450				.509	.729					.749
I tried to put things in perspective.	.802			.328	.839	.427				.543	.568		.484	.716	.613				.320		.630
I tried to think about those things that are going well for me.	.818				.884	.564				.574	.849			.847	.782						.762
I compared myself to people who are worse off.	.596				.630	x				.816	.563			.457	.555						.578
I tried to find something good in the situation.	.796				.814	x				.682	.725			.645	.797						.712
I went to my favourite place in nature.		.816			.771		.786			.722		.844		.751		.789					.775
I went for a walk in the forest, in a park, on the beach or some other natural setting.		.783			.744	.429	.389			.772		.845		.794		.755					.675
I went for a walk downtown.		.385			.549	.511	x			.517		.612		.547		.354	.394				.509
I went to my favourite place in an urban setting.		x			.381		.792			.776	.393	.406		.707		.456	.433				.576
I worked on something or stayed busy to forget my mood.			x		.415	.459		x		.427			.708	.597				.533			.373
I thought about something to distract myself from my feelings.			x		.769			x		.659			.738	.621				.685			.596
I watched TV, read a book, etc., for distraction.			x		.369	.584		x		.625			.719	.617				.564			.638
I took action to solve the problem causing my mood.				.681	.639				x	.423				.482	.528	.314					.651
I tried to understand my feelings by thinking and analyzing them.	.434			.637	.792	.331			x	.699				.534	.573						.466
I made plans or a resolution to avoid such problems in the future.	.325			.749	.775				x	.512				.835	.760						.722
I tried to reinterpret the situation, to find a different meaning.	.578			.308	.624	.569			x	.642				.644	.679	.436					.547
Eigenvalue	4.240	2.064	x	2.093		2.946	2.611	x	1.532		3.808	2.866	2.495	2.519		3.566	2.341	2.565			1.666
% of variance	11.777	5.733	x	5.814		8.185	7.252	x	4.256		10.579	7.960	6.930	6.996		9.906	6.504	7.126			4.627
$\alpha$	.886	.725	.224	.797		.499	.749	.458	.471		.778	.793	.749	.743		.822	.734	.625			.671

F1 Perspective  
 F2 Environment  
 F3 Distraction  
 F4 Analysis/Action

x: the item did not load on the expected factor

\* The factor included additional variables.

Netherlands F1: "I did something fun, something I really enjoy" (.692, h2= .708), "I laughed, joked around, tried to make myself or others laugh" (.467, h2= .486)

Netherlands F2: "I went out of my way to help someone" (.544, h2= .654)

Sweden F1: "I laughed, joked around, tried to make myself or others laugh" (.630, h2= .710)

Sweden F2: "I played sports, exercised" (.421, h2= .353), "I went out of my way to help someone" (.378, h2= .651)

Sweden F3: "I did something fun, something I really enjoy" (.514, h2= .405)

**Table 3.4** Factors by country for the regulation of feelings in general (perceived efficacy).

	AUSTRALIA					INDIA				NETHERLANDS				SWEDEN							
	F1	F2	F3	F4	h <sup>2</sup>	F1*	F2	F3	F4	h <sup>2</sup>	F1	F2	F3	F4*	h <sup>2</sup>	F1	F2	F3	F4	h <sup>2</sup>	
I tried to be grateful for the things in my life that are going well.	.757				.751	.804				.791	.533				.812	.716					.660
I tried to put things in perspective.	.853				.841	x				.520	x			.404	.737	.636				.447	.780
I tried to think about those things that are going well for me.	.845				.803	.855				.870	.339				.827	.758					.780
I compared myself to people who are worse off.	.669				.570	x				.481	.623				.696	x					.666
I tried to find something good in the situation.	.803				.780	.607			.348	.714	.674				.632	.328				.606	.813
I went to my favourite place in nature.	.305	.792			.794		.737			.742		.778			.641		.845				.778
I went for a walk in the forest, in a park, on the beach or some other natural setting.		.838			.876	.355	.618			.785		.932			.929		.553				.621
I went for a walk downtown.		x**			.631		.629			.752		.581			.598	.584	.416	.336			.734
I went to my favourite place in an urban setting.		x**			.731		.801			.856		.321			.814		.554				.570
I worked on something or stayed busy to forget my mood.			x		.696	.541		x		.713			.609		.512			.748			.764
I thought about something to distract myself from my feelings.			.717		.663	.541		x		.827			.719		.655	.305		.551			.560
I watched TV, read a book, etc., for distraction.			.654		.521			x		.399			.546		.424			.377			.370
I took action to solve the problem causing my mood.	.615			x	.682			.816	.742					.607	.553					.675	.660
I tried to understand my feelings by thinking and analyzing them.	.794			x	.815	.597		.315	.703					.369	.615					.726	.663
I made plans or a resolution to avoid such problems in the future.	.618			x	.481	.492		x	.626	.314				.517	.574					.433	.738
I tried to reinterpret the situation, to find a different meaning.	.696			x	.688			x	.403	.367				x	.552					.585	.634
Eigenvalue	6.795	2.003	2.169	x		4.454	3.225	x	1.466		2.184	2.711	1.803	3.366		3.280	2.305	1.684	2.462		
% of variance	18.875	5.564	6.025	x		12.372	8.959	x	4.072		6.065	7.529	5.010	9.350		9.112	6.402	4.677	6.840		
$\alpha$	.911	.803	.546	.801		.715	.842	.527	.676		.835	.812	.644	.764		.832	.809	.589	.750		

F1 Perspective  
F2 Environment  
F3 Distraction  
F4 Analysis/Action

x: the item did not load on the expected factor

\* The factor included additional variables.

India F1: "I went out of my way to help someone" (.622, h2= .652)

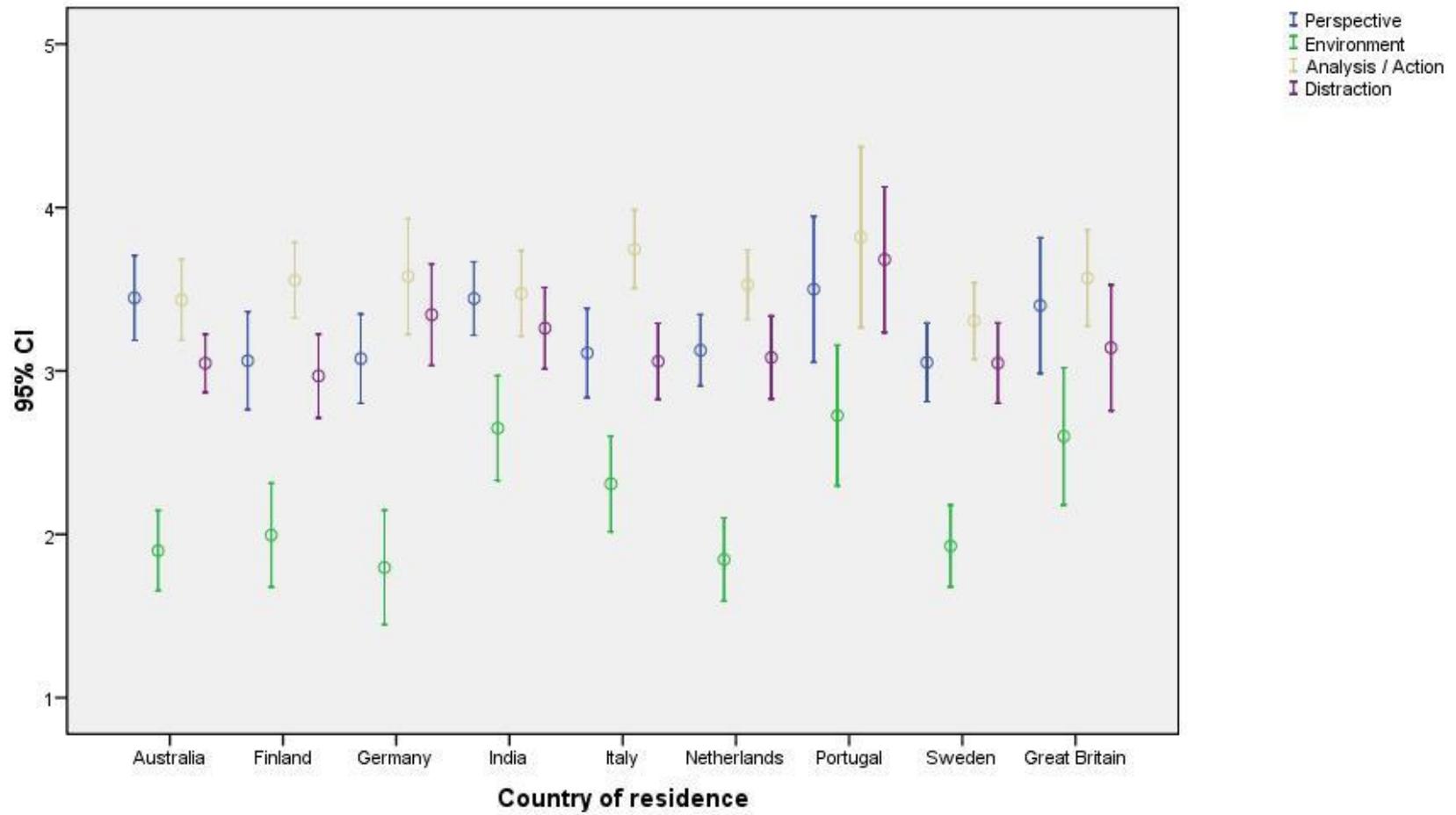
Netherlands F4: "I talked to someone about my feelings" (.692, h2= .601), "I talked to an advisor or mentor" (.747, h2= .639), "I let my feelings out by venting or expressing them" (.728, h2= .778), "I laughed, joked around, tried to make myself or others laugh" (.416, h2= .549)

\*\* The regulation strategies related to urban environments formed a separate factor (loadings .712 and .757)

### **3.2 Differences between countries in affect regulation**

In order to find out whether there were differences between countries in the frequency of use and perceived efficacy of affect regulation strategies, a multivariate analysis of variance (MANOVA) was performed. The analysis was performed separately for the data concerning regulation of sadness and the data concerning regulation of feelings in general. Post hoc tests were conducted to find the group means which differed from each other significantly.

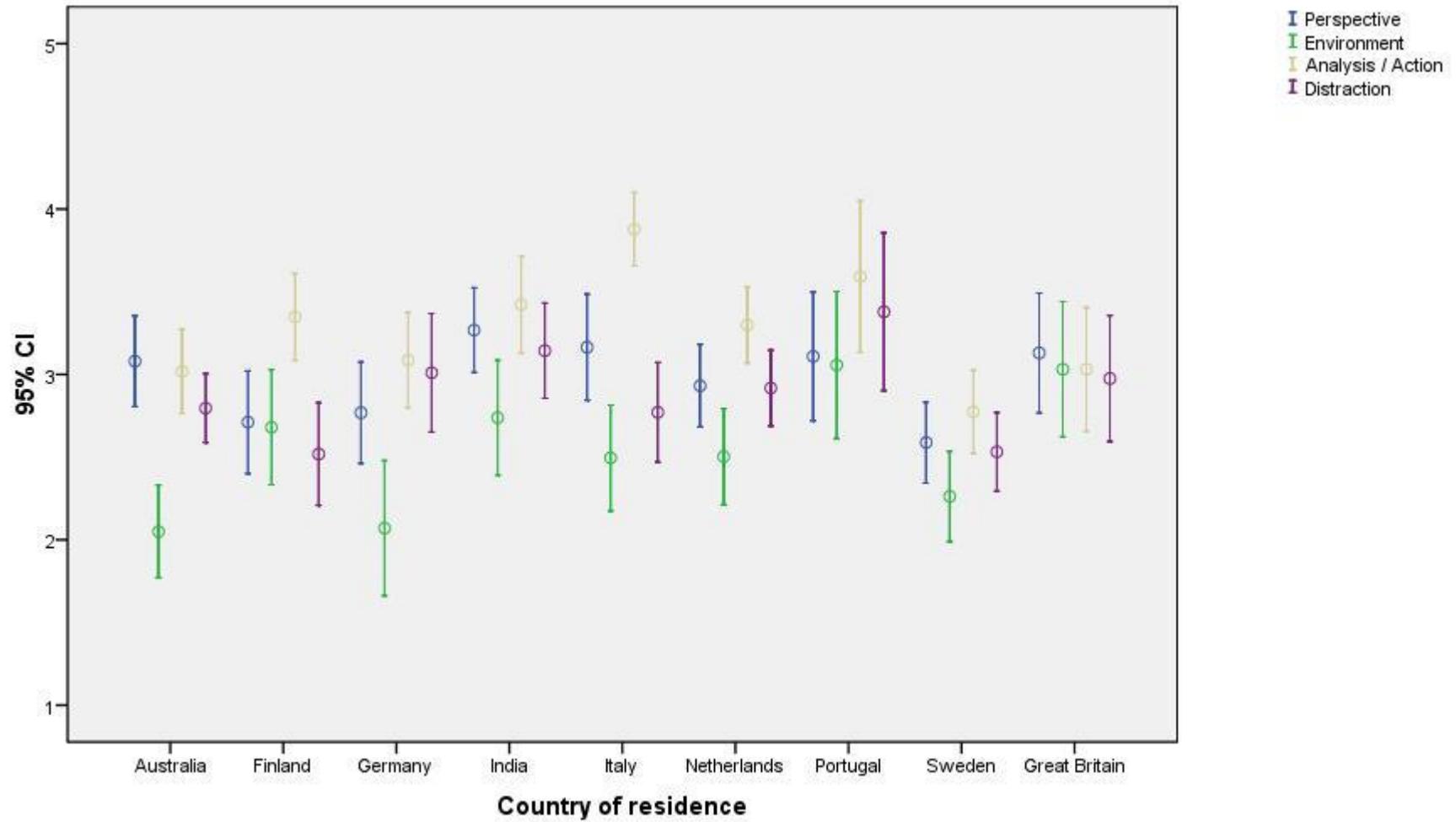
Figure 1.1 illustrates the differences between countries in the frequency of use of the four affect regulation categories for **feelings in general**. Environmental strategies are consistently the least frequently used with the order of the other three categories varying slightly between countries. The MANOVA results showed that for frequency of use in the feelings in general data, the assumption of equal covariance matrices across groups did not hold (Box's test  $p < .05$ ). However, the analysis method is fairly robust in spite of this. The multivariate test result was statistically significant (Pillai's Trace = .147,  $F_{(32,1,988E3)} = 2.37$ ,  $p = .000$ ). Country of residence explained 3.7% of the overall variance (Partial Eta Squared). Tests of between subject effects indicated significant differences in the frequency of use of the environmental affect regulation strategies only ( $F_{(8,497)} = 5.146$ ,  $p = .000$ ). Country of residence explained 7.6 % of the variance. The variance of the environmental regulation variable was equal across groups (Levene  $p > .05$ ). Multiple comparisons (Bonferroni) showed that Indians ( $x = 2.65$ ,  $s = 1.29$ ) reported using the environmental strategies more frequently than Australians ( $x = 1.90$ ,  $s = 1.14$ ,  $p = .003$ ), Germans ( $x = 1.80$ ,  $s = 0.97$ ,  $p = .023$ ), the Dutch ( $x = 1.85$ ,  $s = 1.09$ ,  $p = .002$ ) or Swedes ( $x = 1.93$ ,  $s = 1.15$ ,  $p = .006$ ). Frequency of use was higher for Great Britain ( $x = 2.60$ ,  $s = 1.31$ ) than for the Netherlands ( $x = 1.85$ ,  $s = 1.09$ ,  $p = .032$ ).



**Figure 1.1 Frequency of use of affect regulation strategies by country (feelings in general)**

**Scale: 0= not at all, 1=hardly ever, 2=sometimes, 3=moderate amount, 4=often, 5=very often, 6=almost always**

As can be seen in figure 1.2, for perceived efficacy in the same data set the environmental regulation strategies were most commonly rated as least effective although some variation between countries did occur and the difference between environmental regulation strategies and other strategies is not as pronounced as with frequency of use. The analysis and action strategies appear to have the highest efficacy ratings in most cases with perspective-taking and distraction falling somewhere in between. The observed covariance matrices of the dependent variables were equal across groups (Box's test  $p > .05$ ). The multivariate test result was statistically significant (Pillai's Trace = .223,  $F_{(32,1.988E3)} = 3.668$ ,  $p = .000$ ). Country of residence explained 5.6% of the overall variance. Tests of between subjects effects showed differences between countries in perspective-taking strategies ( $F_{(8,497)} = 2.764$ ,  $p = .005$ ), environmental strategies, ( $F_{(8,497)} = 4.043$ ,  $p = .000$ ), analysis and action oriented strategies ( $F_{(8,497)} = 5.649$ ,  $p = .000$ ) and distraction strategies ( $F_{(8,497)} = 3.101$ ,  $p = .002$ ). Country of residence explained 4.3%, 6.1%, 8.3% and 4.8% of the variance, respectively. Since the test of equality of error variance (Levene) was significant for Analysis / Action ( $p < .05$ ), the non-parametric Tamhane was used for the multiple comparisons. Bonferroni was chosen for the other three variables with equal variance between groups ( $p > .05$ ). Multiple comparisons showed Indians ( $x = 3.27$ ,  $s = 1.03$ ) to evaluate perspective taking to be more effective than Swedes ( $x = 2.59$ ,  $s = 1.13$ ,  $p = .009$ ). As for environmental strategies, Indians ( $x = 2.74$ ,  $s = 1.40$ ) saw them as more effective than Australians ( $x = 2.05$ ,  $s = 1.30$ ,  $p = .034$ ), as did the Portuguese ( $x = 3.06$ ,  $s = 1.00$ ,  $p = .031$ ) and the British ( $x = 3.03$ ,  $s = 1.28$ ,  $p = .002$ ). The British also evaluated these strategies to be more effective than Germans ( $x = 2.07$ ,  $s = 1.13$ ,  $p = .049$ ). Indians ( $x = 3.14$ ,  $s = 1.16$ ) considered distraction strategies to be more effective than Swedes ( $x = 2.53$ ,  $s = 1.10$ ,  $p = .021$ ). This was true also for the Portuguese ( $x = 3.38$ ,  $s = 1.08$ ,  $p = .037$ ). Italians ( $x = 3.88$ ,  $s = 0.79$ ) saw active analysis and/or action to be more effective than Swedes ( $x = 2.77$ ,  $s = 1.16$ ,  $p = .000$ ), Australians ( $x = 3.02$ ,  $s = 1.18$ ,  $p = .000$ ), the Dutch ( $x = 3.30$ ,  $s = 0.99$ ,  $p = .015$ ), Germans ( $x = 3.09$ ,  $s = 0.80$ ,  $p = .001$ ) or the British ( $x = 3.03$ ,  $s = 1.17$ ,  $p = .007$ ). Indians ( $x = 3.42$ ,  $s = 1.18$ ) viewed these strategies more favorably than Swedes ( $x = 2.77$ ,  $s = 1.16$ ,  $p = .036$ ).



**Figure 1.2 Perceived efficacy of affect regulation strategies by country (feelings in general)**  
**Scale: 0= not at all, 1=hardly at all, 2= sometimes, 3= moderately, 4= often, 5= very often, 6= almost always**

Figure 1.3 displays the results for frequency of use in the **sadness** data. Again, environmental strategies are the least frequently used in all the countries. Analysis and action oriented strategies are most commonly used in most of the countries. For frequency of use in the sadness data, the covariance matrices were not equal (Box's test  $p < .05$ ). The multivariate test result was statistically significant (Pillai's Trace = .206,  $F_{(32,2.464E3)} = 4.181$ ,  $p = .000$ ). Country of residence explained 5.2% of the overall variance. Tests of between subjects effects indicated differences between countries in the frequency of use of environmental strategies ( $F_{(8,616)} = 6.301$ ,  $p = .000$ ), analysis and action strategies, ( $F_{(8,616)} = 3.639$ ,  $p = .000$ ) and distraction strategies ( $F_{(8,616)} = 5.750$ ,  $p = .000$ ). Country of residence accounted for 7.6%, 4.5% and 6.9% of the variance, respectively. Multiple comparisons (Tamhane for 'Analysis / Action', Bonferroni for 'Environment' and 'Distraction') revealed that Italians ( $x = 2.66$ ,  $s = 1.22$ ) reported using the environmental strategies more frequently than Finns ( $x = 1.83$ ,  $s = 1.06$ ,  $p = .000$ ), the Dutch ( $x = 1.80$ ,  $s = 1.00$ ,  $p = .000$ ), Swedes ( $x = 2.12$ ,  $s = 1.12$ ,  $p = .017$ ), Americans ( $x = 1.66$ ,  $s = .93$ ,  $p = .000$ ) or Australians ( $x = 1.99$ ,  $s = 1.12$ ,  $p = .022$ ). In addition, the British ( $x = 2.69$ ,  $s = 1.42$ ) used these strategies more frequently than Finns ( $x = 1.83$ ,  $s = 1.06$ ,  $p = .003$ ), the Dutch ( $x = 1.80$ ,  $s = 1.00$ ,  $p = .006$ ) or Americans ( $x = 1.66$ ,  $s = .93$ ,  $p = .001$ ). Swedes ( $x = 2.74$ ,  $s = 1.09$ ) reported using distraction strategies less frequently than Australians ( $x = 3.43$ ,  $s = 1.03$ ,  $p = .001$ ), Italians ( $x = 3.50$ ,  $s = 1.06$ ,  $p = .000$ ), the Dutch ( $x = 3.36$ ,  $s = .85$ ,  $p = .002$ ), the British ( $x = 3.41$ ,  $s = 1.08$ ,  $p = .027$ ) or Americans ( $x = 3.42$ ,  $s = .93$ ,  $p = .003$ ). Italians ( $x = 3.84$ ,  $s = 1.18$ ) used analysis / action strategies more often than the Dutch ( $x = 3.28$ ,  $s = .87$ ,  $p = .039$ ) or Danes ( $x = 2.92$ ,  $s = .97$ ,  $p = .008$ ). Also, Americans ( $x = 3.75$ ,  $s = .77$ ) reported using these strategies more often than Danes ( $x = 2.92$ ,  $s = .97$ ,  $p = .018$ ).

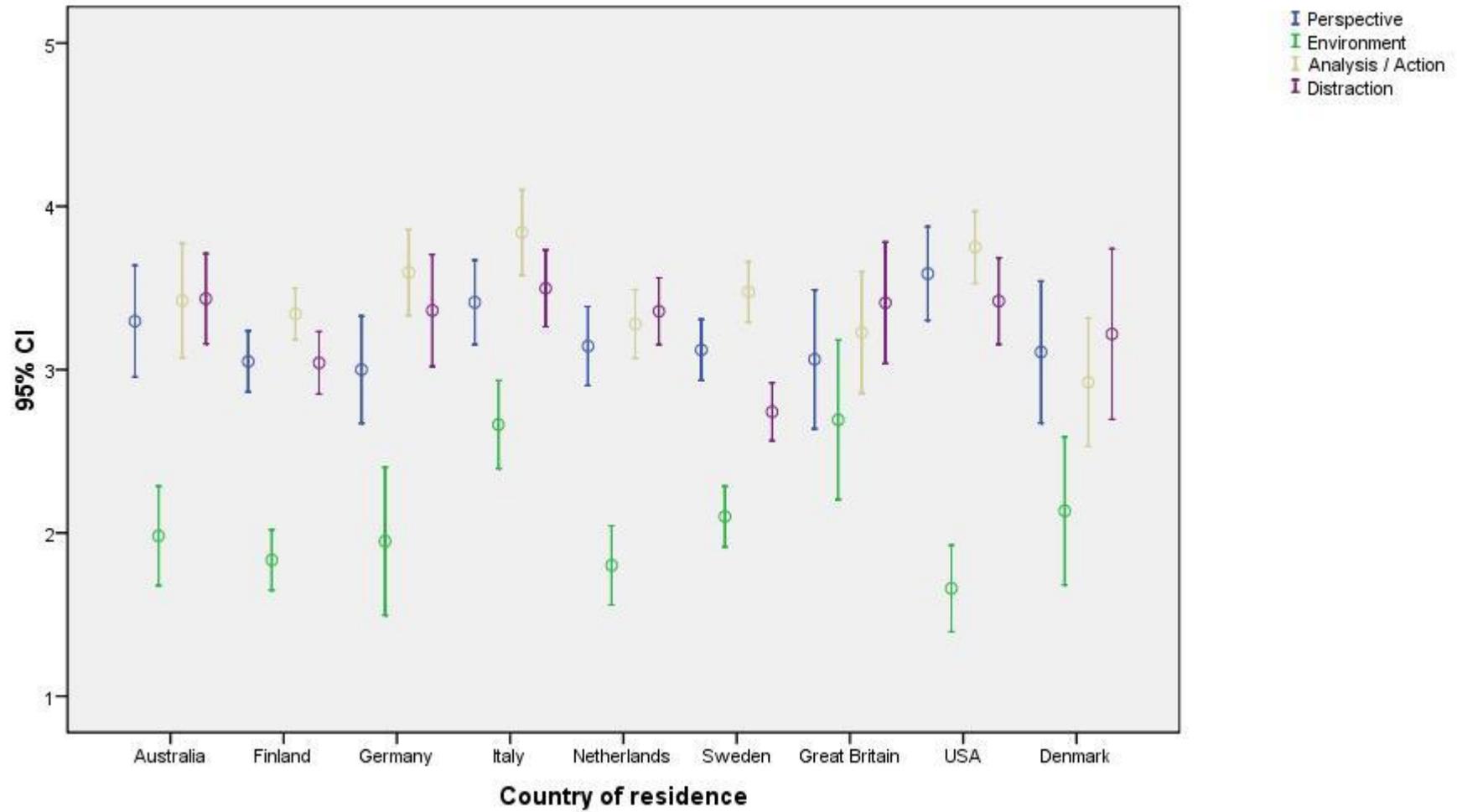


Figure 1.3 Frequency of use of affect regulation strategies by country (sadness)

Scale: 0= not at all, 1= hardly ever, 2= sometimes, 3= moderate amount, 4= often, 5= very often, 6= almost always

Figure 1.4 shows the efficacy evaluations by country in the regulation of **sadness** data. Analysis and action strategies appear to be evaluated as most effective in most of the countries. Environmental regulation is again mostly perceived as the least effective strategy although some exceptions do occur and the gap between environmental strategies and other strategies doesn't appear to be as big as with frequency of use. For perceived efficacy of the different affect regulation strategies in relation to the regulation of sadness, the assumption of equal covariance matrices across groups again did not hold ( $p < .05$ ). The multivariate test result was statistically significant (Pillai's Trace = .204,  $F_{(32,2.464E3)} = 4.128$ ,  $p = .000$ ). Country of residence accounted for 5.1% of the overall variance. Tests of between subject effects indicated differences between countries in all of the affect regulation categories: 'Perspective' ( $F_{(8,616)} = 4.998$ ,  $p = .000$ ), 'Environment' ( $F_{(8,616)} = 3.947$ ,  $p = .000$ ), 'Analysis / Action' ( $F_{(8,616)} = 8.069$ ,  $p = .000$ ), 'Distraction' ( $F_{(8,616)} = 4.902$ ,  $p = .000$ ). Country of residence explained 6.1%, 4.9%, 9.5% and 6.0% of the variance in the variables, respectively. Tamhane was again used as the Post Hoc test for 'Analysis / Action' since the variance was not equal between groups (Levene's test  $p < .05$ ). The variance was equal for the other three variables ( $p > .05$ ) and thus Bonferroni was used as the Post Hoc test. Italians ( $x = 3.42$ ,  $s = 1.22$ ) evaluated the strategies related to taking perspective to be more effective than Finns ( $x = 2.59$ ,  $s = 1.08$ ,  $p = .000$ ), Germans ( $x = 2.57$ ,  $s = .87$ ,  $p = .008$ ), Swedes ( $x = 2.76$ ,  $s = 1.18$ ,  $p = .001$ ) or the British ( $x = 2.65$ ,  $s = 1.17$ ,  $p = .026$ ). Americans ( $x = 3.28$ ,  $s = 1.17$ ) saw these types of regulatory strategies as more effective than Finns ( $x = 2.59$ ,  $s = 1.08$ ,  $p = .010$ ). Italians ( $x = 2.90$ ,  $s = 1.35$ ) evaluated the environmental strategies as more effective than Finns ( $x = 2.17$ ,  $s = 1.14$ ,  $p = .002$ ), the Dutch ( $x = 2.23$ ,  $s = 1.19$ ,  $p = .024$ ) or Americans ( $x = 2.12$ ,  $s = 1.22$ ,  $p = .011$ ). Italians ( $x = 3.32$ ,  $s = 1.27$ ) also viewed the distraction strategies more favorably than Finns ( $x = 2.68$ ,  $s = 1.11$ ,  $p = .002$ ), Swedes ( $x = 2.45$ ,  $s = 1.09$ ,  $p = .000$ ) or Danes ( $x = 2.35$ ,  $s = 1.07$ ,  $p = .004$ ). As for the analysis and action oriented strategies, Italians' efficacy evaluations ( $x = 3.93$ ,  $s = 1.38$ ) differed from all of the other countries. They viewed these strategies as more effective than Australians ( $x = 2.91$ ,  $s = 1.24$ ,  $p = .001$ ), Finns ( $x = 2.84$ ,  $s = 1.04$ ,  $p = .000$ ), Germans ( $x = 2.79$ ,  $s = .94$ ,  $p = .000$ ), the Dutch ( $x = 3.07$ ,  $s = .92$ ,  $p = .000$ ), Swedes ( $x = 2.97$ ,  $s = 1.11$ ,  $p = .000$ ), the British ( $x = 2.81$ ,  $s =$

1.26,  $p = .002$ ), Americans ( $x = 3.09$ ,  $s = .91$ ,  $p = .002$ ) or Danes ( $x = 2.62$ ,  $s = .91$ ,  $p = .000$ ).

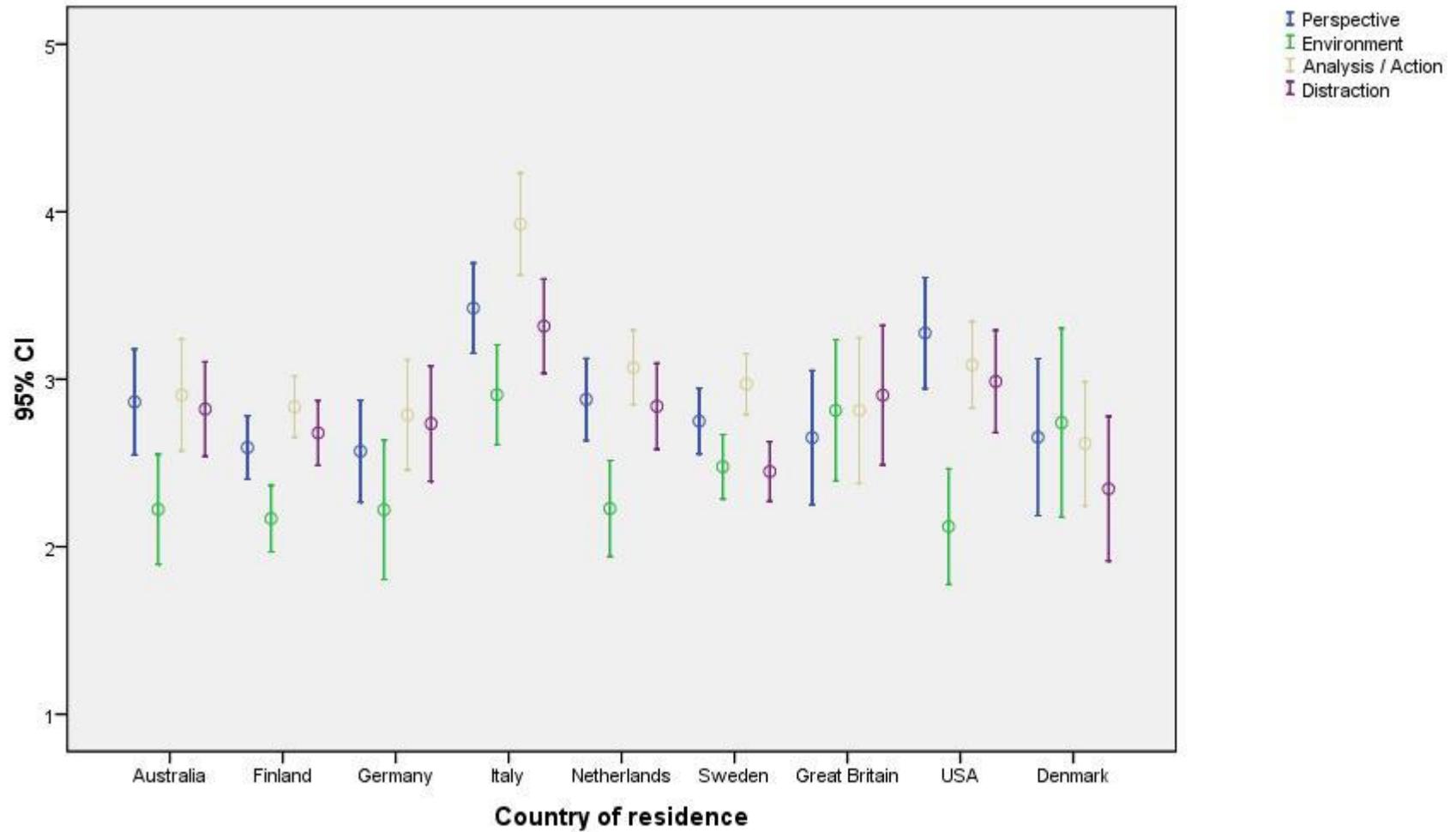


Figure 1.4 Perceived efficacy of affect regulation strategies by country (sadness)

Scale: 0= not at all, 1= hardly at all, 2= sometimes, 3= moderately, 4= often, 5= very often, 6= almost always

### 3.3. Relationships between affect regulation strategies and subjective well-being

Linear regressions (enter method) using the whole data set were used to assess the relationships between 1) frequency of use and 2) perceived efficacy of affect regulation strategies and measures of well-being. The analyses were again performed separately for the regulation of feelings in general and the regulation of sadness. The correlations between the four affect regulation strategies are summarized in table 4.1 (regulation of feelings in general) and 4.2 (regulation of sadness). Although zero-order correlations between regulation strategies were relatively high, all tolerance values in all of the regression analyses were  $>.50$  suggesting no major problems with multicollinearity.

**Table 4.1** *Pearson correlations between affect regulation strategies (feelings in general).*

		Perspective	Environment	Analysis/Action	Distraction
Frequency of use	Perspective	1.000	-	-	-
	Environment	.295*	1.000	-	-
	Analysis/Action	.499*	.263*	1.000	-
	Distraction	.235*	.239*	.123*	1.000
Perceived efficacy	Perspective	1.000	-	-	-
	Environment	.350*	1.000	-	-
	Analysis/Action	.593*	.251*	1.000	-
	Distraction	.370*	.324*	.234*	1.000

\* $p < .05$

**Table 4.2** *Pearson correlations between affect regulation strategies (sadness).*

		Perspective	Environment	Analysis/Action	Distraction
Frequency of use	Perspective	1.000	-	-	-
	Environment	.273*	1.000	-	-
	Analysis/Action	.514*	.253*	1.000	-
	Distraction	.260*	.195*	.171*	1.000
Perceived efficacy	Perspective	1.000	-	-	-
	Environment	.359*	1.000	-	-
	Analysis/Action	.614*	.296*	1.000	-
	Distraction	.314*	.252*	.203*	1.000

\* $p < .05$

### 3.3.1 Satisfaction with life

The relationships between the four affect regulation strategy variables (perspective-taking, environmental regulation, analysis and action, distraction) and satisfaction with life (measured with SWL) were examined using linear regression (enter). The assumptions of normality, linearity and homoscedasticity were satisfactorily met in all analyses and no outliers were detected. The frequency of using regulation strategies for **feelings in general** was significantly associated with life satisfaction:  $F_{(4,501)}=26.153$ ,  $p < .05$ . The model accounts for 16.6% of the variance (Adjusted  $R^2 = .166$ ). Perspective-taking and distraction were significant predictors, environment and analysis and action were not (Table 5.1). The relationship between perspective-taking and satisfaction with life was positive: the more people report using perspective-taking in affect regulation, the more satisfied they are with their lives. The opposite was true for distraction: the more people use this strategy, the less satisfied they are with their lives. Perceived efficacy in the same data set predicted satisfaction with life significantly:  $F_{(4,501)}=22.492$ ,  $p < .05$ . The model explains 14.5 % of the variance (Adjusted  $R^2 = .145$ ). Perspective-taking and analysis and action were significant predictors but environmental regulation and distraction were not (Table 5.1). The relationship between both significant predictor variables and satisfaction with life was positive: the more efficient people perceive these strategies to be, the more satisfied they are with their lives.

**Table 5.1** Regression analyses (enter) predicting life satisfaction with frequency of use ( $N=507$ ) and perceived efficacy ( $N=507$ ) of affect regulation strategies (feelings in general).

Variable	Frequency of use			Perceived efficacy		
	B	SE B	$\beta$	B	SE B	$\beta$
Perspective	2.449	.305	.390*	1.913	.323	.323*
Environment	.190	.246	.034	.012	.234	.002
Analysis / Action	.321	.312	.049	.686	.310	.113*
Distraction	-.537	.284	-.081*	-.218	.279	-.036

Note: B = unstandardized regression coefficient, SE B = standard error of the regression coefficient,  $\beta$  = standardized regression coefficient ; \* $p < .05$

In the analysis of regulation of **sadness**, there was a significant association between the frequency of use of the affect regulation strategies and life satisfaction:  $F_{(4,620)}=25.090$ ,  $p < .05$ . The model explains 13.4% of the variance (Adjusted  $R^2=$

.134). ‘Environment’ was the only non-significant predictor (Table 5.2). ‘Distraction’ was the only significant predictor variable with a negative relationship to satisfaction with life: the more people report using this strategy, the less satisfied they are with their lives. The relationships between both perspective-taking and analysis and action and life satisfaction were positive: the more people report using these strategies, the more satisfied they are with their lives. A significant association was also found between efficacy evaluations and satisfaction with life:  $F_{(4,620)} = 15.902$ ,  $p < .05$ . The model accounts for 8.7% of the variance (Adjusted  $R^2 = .087$ ). All of the predictor variables except for analysis and action were significant (Table 5.2). Again, distraction was the only strategy with a negative relationship to satisfaction with life. Environment had a significant positive association with SWL meaning that the more efficient people perceive environmental means to be in the regulation of sadness, the more satisfied they are with their lives. The same holds for perspective-taking.

**Table 5.2** Regression analyses (enter) predicting life satisfaction with frequency of use ( $N=626$ ) and perceived efficacy ( $N=626$ ) of affect regulation strategies (sadness).

Variable	Frequency of use			Perceived efficacy		
	B	SE B	$\beta$	B	SE B	$\beta$
Perspective	1.815	.270	.301*	1.268	.295	.219*
Environment	.026	.226	.005	.502	.226	.093*
Analysis / Action	.822	.283	.127*	.454	.280	.079
Distraction	-.897	.241	-.145*	-.882	.239	-.151*

Note: B = unstandardized regression coefficient, SE B = standard error of the regression coefficient,  $\beta$  = standardized regression coefficient ; \* $p < .05$

### 3.3.2 Emotional well-being

The relationships between the different affect regulation strategies identified in this study and emotional well-being (measured with items from RAND-36) was also explored using linear regression (enter). Three univariate outliers ( $> 3$  standard deviations) were removed from the analysis of frequency of use and one from the analysis of perceived efficacy for feelings in general. All outliers were cases with exceptionally low scores of emotional well-being. The frequency of using regulation strategies for **feelings in general** predicted emotional well-being significantly:  $F_{(4,501)} = 13.108$ ,  $p < .05$ . The model accounts for 8.8% of the variance (Adjusted  $R^2 = .088$ ). Perspective-taking and distraction were significant predictors (Table 6.1). The

relationship between distraction and emotional well-being was negative: the more people use distraction in affect regulation, the lower their scores for emotional well-being are. The opposite is true for perspective-taking. There was also a significant association between the efficacy evaluations and emotional well-being:  $F_{(4,501)}=12.542$ ,  $p < .05$ . The model explains 8.4% of the variance (Adjusted  $R^2 = .084$ ). Perspective-taking and analysis and action were significant predictors, both with positive relationships to emotional well-being (Table 6.1): the more efficient people think these strategies are, the better their emotional well-being status is.

**Table 6.1** Regression analyses (enter) predicting emotional well-being with frequency of use ( $N=504$ ) and perceived efficacy ( $N=506$ ) of affect regulation strategies (feelings in general).

Variable	Frequency of use			Perceived efficacy		
	B	SE B	$\beta$	B	SE B	$\beta$
Perspective	4.233	.814	.265*	2.492	.872	.162*
Environment	-.212	.653	-.015	-.256	.630	-.019
Analysis / Action	.966	.831	.058	3.104	.834	.199*
Distraction	-3.003	.753	-.178*	-.966	.753	-.061

Note: B = unstandardized regression coefficient, SE B = standard error of the regression coefficient,  $\beta$  = standardized regression coefficient ; \* $p < .05$

Three outliers (  $> 3$  standard deviations) with low RAND-scores were removed from the analysis of frequency of use of affect regulation strategies in the regulation of sadness. No outliers were detected in the analysis of perceived efficacy. For the regulation of **sadness**, the frequency of using the affect regulation strategies was a significant predictor of emotional well-being:  $F_{(4,620)}=25.096$ ,  $p < .05$ . The model accounts for 13.4% of the variance (Adjusted  $R^2 = .134$ ). In this analysis, environment was the only non-significant predictor variable (Table 6.2). As in the previous analyses, the relationship between using distraction to regulate feelings of sadness and emotional well-being was negative. The results were similar for perceived efficacy. The association between efficacy evaluations and emotional well-being was significant:  $F_{(4,620)}=23.164$ ,  $p < .05$ . The model accounts for 12.4% of the variance (Adjusted  $R^2 = .124$ ). Environment was the only non-significant predictor in this analysis also and the relationship between distraction and emotional well-being was negative: the more efficient people evaluate distraction to be in the regulation of sadness, the lower their scores for emotional well-being are (Table 6.2).

**Table 6.2** Regression analyses (enter) predicting emotional well-being with frequency of use (N=623) and perceived efficacy (N=626) of affect regulation strategies (sadness).

Variable	Frequency of use			Perceived efficacy		
	B	SE B	$\beta$	B	SE B	$\beta$
Perspective	4.190	.693	.271*	3.193	.749	.213*
Environment	-.652	.582	-.044	.022	.575	.002
Analysis / Action	2.542	.724	.154*	2.790	.713	.186*
Distraction	-3.389	.617	-.215*	-3.266	.607	-.215*

Note: B = unstandardized regression coefficient, SE B = standard error of the regression coefficient,  $\beta$  = standardized regression coefficient ; \*p < .05

### 3.3.3 Perceived general health

Perceived general health was measured by a single question “How is your health at the moment?” with response alternatives ranging from 1 (poor) to 5 (excellent). As with life satisfaction and emotional well-being, the relationships between the affect regulation strategies and self-rated health were examined using linear regression (enter method). In the analysis of frequency of use in the regulation of **feelings in general**, eight univariate outliers (> 3 standard deviations) were removed. The outliers were respondents reporting poor health. Eight outliers were also removed on the same grounds from the analysis of perceived efficacy. Frequency of use was a significant predictor of perceived general health:  $F_{(4,500)} = 4.513$ ,  $p < .05$ . The model accounts for 2.8% of the variance (Adjusted  $R^2 = .028$ ). Perspective-taking was the only significant predictor and it had a positive association with health: the more people use perspective-taking to regulate feelings in general, the healthier they perceive themselves to be (Table 7.1). Perceived efficacy of strategies in the regulation of feelings in general predicted perceived health significantly:  $F_{(4,500)} = 5.596$ ,  $p < .05$ . The model explains 3.6% of the variance (Adjusted  $R^2 = .036$ ). In this analysis, environmental regulation was the only significant predictor (Table 7.1): the more efficient people consider environmental regulation to be, the better their health ratings are.

**Table 7.1** Regression analyses (enter) predicting general health with frequency of use (N=499) and perceived efficacy (N=499) of affect regulation strategies (feelings in general).

Variable	Frequency of use			Perceived efficacy		
	B	SE B	$\beta$	B	SE B	$\beta$
Perspective	.087	.038	.121*	.068	.040	.100
Environment	.050	.031	.077	.063	.029	.107*
Analysis / Action	.043	.039	.056	.062	.038	.088
Distraction	-.038	.035	-.050	-.044	.034	-.062

Note: B = unstandardized regression coefficient, SE B = standard error of the regression coefficient,  $\beta$  = standardized regression coefficient ; \*p < .05

A total of nine univariate outliers (> 3 standard deviations) were removed from the analysis of frequency of use in the regulation of **sadness** and ten from the analysis of perceived efficacy. The outliers were again respondents with low health ratings. Frequency of use predicted general health significantly in this analysis also:  $F_{(4,620)} = 9.416, p < .05$ . The model explains 5.2% of the variance (Adjusted  $R^2 = .052$ ). Perspective-taking and distraction were significant predictors (Table 7.2) but with opposite associations with general health: the more people use perspective-taking in the regulation of sadness, the higher their health ratings are whereas the more they use distraction, the lower their health ratings are. Results were similar for perceived efficacy. Perceived efficacy had a significant association with general health:  $F_{(4,620)} = 5.865, p < .05$ . The model accounts for 3.1% of the variance (Adjusted  $R^2 = .031$ ). Also in this analysis perspective-taking and distraction were significant predictors of general health (Table 7.2): perspective-taking has a positive association with general health and distraction has a negative association.

**Table 7.2** Regression analyses (enter) predicting general health with frequency of use (N=617) and perceived efficacy (N=616) of affect regulation strategies (sadness).

Variable	Frequency of use			Perceived efficacy		
	B	SE B	$\beta$	B	SE B	$\beta$
Perspective	.147	.033	.208*	.107	.035	.159*
Environment	-.020	.028	-.030	-.009	.027	-.014
Analysis / Action	.020	.035	.027	.020	.033	.030
Distraction	-.123	.030	-.170*	-.099	.029	-.146*

Note: B = unstandardized regression coefficient, SE B = standard error of the regression coefficient,  $\beta$  = standardized regression coefficient ; \*p < .05

### **3.3.4 Relationships between affect regulation strategies and subjective well-being by country**

Perceived efficacy of environmental affect regulation strategies was a significant predictor of life satisfaction in the regulation of sadness and a predictor of perceived general health in the regulation of feelings in general in the analyses of the total samples (see Table 5.2. and Table 7.1.). Linear regression analyses were carried out by country in these two cases to see, whether the same associations could be found in these analyses also. For feelings in general, two countries met the standard for sampling adequacy ( $N = \text{number of predictor variables} \times 4 + 50$ , Tabachnick & Fidell, 2007): Australia ( $N=85$ ) and Sweden ( $N=84$ ). For sadness, the countries were Finland ( $N=128$ ) and Sweden ( $N=147$ ). The assumptions of normality, linearity and homoscedasticity were satisfactorily met in all analyses and no outliers were detected.

For Finland in the regulation of sadness, perceived efficacy of the strategies was a significant predictor of satisfaction with life:  $F_{(4,123)} = 6.326$ ,  $p < .05$ . The model explains 14.4% of the variance (Adjusted  $R^2 = .144$ ). Perspective-taking (Beta= .378) and distraction (Beta= -.167) were significant predictors ( $p < .05$ ). The more effective Finns evaluate perspective-taking to be in the regulation of sadness, the more satisfied they are with their lives where as the more effective they perceive distraction to be the less satisfied they are with their lives. For Sweden, perceived efficacy of the strategies also had a significant association with life satisfaction:  $F_{(4,142)} = 6.686$ ,  $p < .05$ . The model accounts for 13.5% of the variance (Adjusted  $R^2 = .135$ ). Perspective-taking (Beta= .227), environmental regulation (Beta= .229) and distraction (Beta= -.162) were all significant predictors ( $p < .05$ ). Distraction was the only significant predictor with a negative association with life satisfaction: The more effective Swedes evaluate distraction to be in the regulation of sadness, the less satisfied they are with their lives. Perspective-taking and environmental regulation were positively associated with life satisfaction.

For Australia and Sweden, none of the affect regulation strategies for feelings in general were significant predictors of perceived general health.

## 4. DISCUSSION

The purpose of this study was to examine the frequency of use and perceived efficacy of affect regulation strategies both for feelings in general and sadness. Special attention was given to the use of the environment in affect regulation, a point of view largely neglected in earlier research on affect regulation strategies. The goal was to shed light on possible cultural differences in affect regulation by comparing data from different countries. The relationships between affect regulation strategies and subjective well-being were also examined. Since the majority of participants were students, any generalizations of the results to the general public should be made with caution.

In accordance with the environmental self-regulation hypothesis, environmental regulation did form a separate subcategory of affect regulation. The environmental regulation factor was consistently found in the factor analyses, both for total sample and by country and in the analyses of both regulation of feelings in general and regulation of sadness. This supports the inclusion of environmental regulation strategies in the study of affect regulation – a fact to be considered in future research. It should be noted, however, that although the strategies related to natural environments and urban environments were grouped together, in some analyses they formed two separate factors. This was the case with the Netherlands in the analysis of frequency of use of affect regulation strategies in the regulation of sadness, with Sweden in the analysis of perceived efficacy in the regulation of sadness and with Australia in the analysis of perceived efficacy in the regulation of feelings in general. The process of affect regulation and restoration may well be different in natural and urban environments and the associations to well-being might also differ. In future research separating natural and urban environments could be worth considering in order to get a clearer picture of the matter.

In previous studies calling, talking to or being with someone, controlling thoughts, listening to music and avoiding the person or thing causing the bad mood (Thayer et al., 1994) and cognitive distraction, rationalization, pleasant or relaxing

activities and social support (Totterdell & Parkinson, 1999) have been the most frequently used strategies of affect regulation. The categories of affect regulation found in this study do not directly correspond with the strategies examined in these earlier studies. In this study analysis and action oriented strategies such as trying to reinterpret the situation or taking action to change the situation causing the mood were the most frequently used in most of the countries involved and both in the regulation of feelings in general and the regulation of sadness. Perspective taking strategies such as trying to be grateful for things that are going well and comparing oneself to people who are worse off and distraction strategies like doing something diversionary were also frequently used. Environmental strategies were consistently reported to be the least used strategies both in regulating feelings in general and in regulating sadness.

For perceived efficacy the order of the four affect regulation strategies was similar. Overall, analysis and action strategies were evaluated to be the most effective, followed by perspective-taking and distraction. Environmental strategies were usually evaluated as least effective out of the four. In earlier studies similar strategies such as seeking pleasurable activities and distraction (including changing location) and active mood management (such as putting feelings in perspective; Thayer et al., 1994) as well as cognitive reappraisal (Totterdell & Parkinson, 1999) have been evaluated to be effective in affect regulation.

Environmental regulation strategies were the least frequently used and perceived to be the least effective in almost all of the countries involved in this study. However, it is interesting that for the evaluations of efficacy the gap between environmental regulation strategies and the other three strategies is not as pronounced as for frequency of use. In fact for some of the countries the perceived efficacy of environmental strategies was at the same level or higher than other strategies. For example in the regulation of feelings in general, Finns and the Portuguese seemed to evaluate environmental strategies to be as effective as perspective-taking. In the regulation of sadness environmental strategies were evaluated to be at least as effective as the other strategies by Danes and the British. People might not use natural and urban environments to regulate their emotions as often as they use other types of strategies but this does not translate directly to how effective they perceive them to be. Looking at frequency of use and perceived efficacy separately can reveal important information about affect regulation.

On the basis of this study it is not possible to speculate, why some regulation strategies are more frequently used in some countries than in others and why some strategies are evaluated as more effective by some than others. For instance, why do Indians use the environment to regulate their feelings more often than Australians, Germans, the Dutch or Swedes? Or why do Italians evaluate analyzing and taking action to be more effective than all the other countries involved in the study? It is up to future research to take a closer look at differences between countries to find possible explanations.

Earlier studies on the associations between affect regulation, subjective well-being and health have found cognitive reappraisal to correlate positively with positive affect and life satisfaction (Haga et al., 2009) and positive reappraisal to correlate with higher levels of psychological well-being and to predict lesser physical deterioration (Adler, 2003). Penley et al. (2002) found problem-focused coping to correlate positively with overall health outcomes and confrontive coping, accepting responsibility, escape avoidance, positive reappraisal and wishful thinking to correlate negatively with psychological health outcomes. Out of the four affect regulation strategies examined in this study, perspective-taking was the most potent predictor of subjective well-being. This strategy is akin to cognitive and positive reappraisal. The more people use perspective-taking to regulate their feelings in general and sadness, the more satisfied they are with their lives, the better their ratings of emotional well-being are and the healthier they perceive themselves to be. The more effective people perceive this strategy to be in the regulation of feelings in general and sadness, the higher their life satisfaction is and the better they view their emotional well-being to be. In addition, the more effective people evaluate perspective-taking to be in the regulation of sadness, the better their self rated health is.

Using distraction in affect regulation is clearly not a productive strategy even though people evaluated it to be somewhat effective. People who use distraction frequently to regulate their feelings in general and their feelings of sadness are less satisfied with their lives, do worse emotionally and perceive their health to be worse. Analysis and action oriented strategies have some positive associations with subjective well-being. This is a result somewhat similar to the finding that problem-focused coping correlates positively with overall health outcomes (Penley et al., 2002). The more effective people evaluate analysis and action to be in the regulation of feelings in general and the more they use these strategies to cope with sadness, the

more satisfied they are with their lives. The more effective people perceive analyzing their feelings and taking action to solve a problematic situation to be in the regulation of feelings in general and sadness, the better they rate their emotional well-being. Also, the more people use these strategies in the regulation of sadness, the better their emotional well-being.

Interestingly, looking at associations between environmental affect regulation and subjective well-being, only the perceived efficacy of these strategies seems to count. Although the perceived efficacy of the environmental strategy was not exceptionally high, this strategy did have associations with both satisfaction with life and perceived health. These results lend partial support to the environmental self-regulation hypothesis. The more effective people evaluate the environment to be in the regulation of sadness, the more satisfied they are with their lives. This result conforms with a finding about the link between spending time in a natural environment and satisfaction with life which, in turn, affects the need for recovery from work demands (Korpela & Kinnunen, in press). Also, the higher the efficacy evaluations of the environmental strategy are for the regulation of feelings in general the healthier people feel. In this study the general health measure was subjective. In light of the fact that green space is known to have beneficial effects on health and even to decrease mortality (Mitchell & Popham, 2008; Takano et al., 2002) and the fact that negative affectivity correlates with subjective but not with objective health (Watson & Pennebaker, 1989), it would be important to conduct a study using objective health measures to see what kinds of associations would emerge. Due to relatively small sample sizes it was not possible to extensively examine the relationships between affect regulation strategies and subjective well-being by country. This is also a challenge for future research to tackle.

It should be noted that linear regressions do not reveal the causal direction of the associations so any such conclusions based on them are hypothetical. It is possible, for example, that people who are satisfied with their lives are prone to frequently use perspective-taking in regulating their feelings, not the other way around. Or that people who perceive their general health to be poor are inclined to use diversionary strategies. A field study where people are instructed to use certain regulation strategies for a given time period and their well-being is measured both before and after this time period could solve this issue.

In this study the regulation of feelings in general and the regulation of sadness were examined separately. This seems to be a well-grounded decision since there were some differences in the results. The factor analysis results for the total sample and by country were similar but not identical for the regulation of feelings in general and the regulation of sadness. This was the case with the multiple analysis of variance also. As for the associations between affect regulation strategies and subjective well-being, the results were different for the two data sets. For example, the frequency of use of the analysis and action strategy predicted higher life satisfaction in the regulation of sadness but not in the regulation of feelings in general. Perceived efficacy of the environmental strategy predicted better perceived health in the regulation of feelings in general but not in the regulation of sadness. In future research affect regulation should be studied with relation to other specific emotions. For example, which strategies are used most often and perceived to be the most effective in the regulation of anger?

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# APPENDIX

## **A. Questionnaire: Influencing feelings, health & well-being**

This questionnaire is about behaviors you use to influence your feelings and moods. It also contains some questions on your health and well-being. It will take you no more than 15 minutes to answer all the questions. I hope that you are open and honest in your responding.

### 1. Background information

Age

Gender

Nationality

Country of residence

Yearly income

Occupation

Major subject (if student)

### 2. Influencing feelings

Here is a list of behaviors that people use to influence their feelings. For each item, choose a number from the following scale to indicate **how frequently** you use that behavior to influence your feelings, either to increase positive moods or to decrease negative moods.

If the item represents a behavior you are for some reason unable to use (e.g. you're physically not able to exercise or there is no suitable place or person available), please put a cross in the right-hand column.

0=Not at all

1=Hardly ever

2=Sometimes

3=Moderate amount

4=Often

5=Very often

6=Almost always

I took action to solve the problem causing my mood.

I tried to understand my feelings by thinking and analyzing them.

I made plans or a resolution to avoid such problems in the future.

I ate something to get over my bad mood.

I went to my favorite place in nature.

I wrote about my feelings in a diary, letter or e-mail.

I withdrew from or avoided the situation.

I tried to not let my feelings show, to suppress any expression.

I talked to someone about my feelings.

I tried to be grateful for the things in my life that are going well.

I went for a walk downtown.  
I thought about something to distract myself from my feelings.  
I drank coffee or caffeinated beverages.  
I did something fun, something I really enjoy.  
I prayed, put my faith in God, or did something religious.  
I watched TV, read a book, etc., for distraction.  
I used alcohol to get out of a bad mood.  
I talked to an advisor or mentor.  
I socialized to forget my mood.  
I tried to reinterpret the situation, to find a different meaning.  
I tried to accept it as my faith, what will be, will be.  
I let my feelings out by venting or expressing them.  
I went to my favorite place in an urban setting.  
I kept to myself, I wanted to be alone.  
I treated myself to something special.  
I tried to put things in perspective.  
I tried to think about those things that are going well for me.  
I laughed, joked around, tried to make myself or others laugh.  
I compared myself to people who are worse off.  
I tried to find something good in the situation.  
I worked on something or stayed busy to forget my mood.  
I played sports, exercised.  
I slept or took a nap.  
I went for a walk in the forest, in a park, on the beach or some other natural setting.  
I went out of my way to help someone.  
I daydreamed of the time when I will not have this problem.

Now please choose a number from the following scale to indicate **how effective** you have perceived each behavior to be in influencing your feelings, either increasing positive moods or decreasing negative moods.

0=Not at all effective  
1=Hardly at all effective  
2=Sometimes effective  
3=Moderately effective  
4=Often effective  
5=Very often effective  
6=Almost always effective

### 3. Satisfaction with life

Below are five statements with which you may agree or disagree. Using the 1-7 scale, indicate your agreement with each item by choosing the appropriate number following that item. Please be open and honest in your responding.

1=Strongly disagree  
2=Disagree  
3=Slightly disagree  
4=Neither agree nor disagree  
5=Slightly agree

6=Agree  
7=Strongly agree

In most ways my life is close to my ideal.  
The conditions of my life are excellent.  
I am satisfied with my life.  
So far I have gotten the important things I want in life.  
If I could live my life over, I would change almost nothing.

#### 4. Emotional well-being

These questions are about how you feel and how things have been with you **during the past 4 weeks**. For each question, please give the answer that comes closest to the way you have been feeling.

1=All the time  
2=Most of the time  
3=A good bit of the time  
4=Some of the time  
5=A little of the time  
6=None of the time

How much of the time during the past four weeks...

Have you been a very nervous person?  
Have you felt so down in the dumps that nothing could cheer you up?  
Have you felt calm and peaceful?  
Have you felt downhearted and blue?  
Have you been a happy person?

#### 5. General health

How is your health at the moment?

1=Poor  
2=Quite poor  
3=Neither poor nor good  
4=Quite good  
5=Excellent

You have now completed the questionnaire. Thank you for your cooperation!

## **B. Questionnaire: Coping with sadness, health & well-being**

This questionnaire is about behaviors you use to influence your feelings of sadness. It also contains some questions on your health and well-being. It will take you no more than 15 minutes to answer all the questions. I hope that you are open and honest in your responding.

### 1. Background information

Age  
Gender  
Nationality  
Country of residence  
Yearly income  
Occupation  
Major subject (if student)

### 2. Coping with sadness

When people experience a loss or a disappointment in their lives, this often leads to feelings of sadness. Sadness is an emotion that usually involves crying more than normally, feelings of hopelessness, low energy and irritability. A person's physical appearance might also be affected by the emotion: a sad person's posture is slumped and his/her movements are slow. His/her voice might be quiet and monotonous.

Please think back on situations where you have experienced feelings of sadness, as described above, and try to relate to the emotion.

Now look at this list of behaviors that people use to influence their feelings. For each item, choose a number from the following scale to indicate **how frequently** you use that behavior to influence your feelings of **sadness**. If the item represents a behavior you are for some reason unable to use (e.g. you're physically not able to exercise or there is no suitable place or person available), please put a cross in the right-hand column.

0=Not at all  
1=Hardly ever  
2=Sometimes  
3=Moderate amount  
4=Often  
5=Very often  
6=Almost always

I took action to solve the problem causing my mood.  
I tried to understand my feelings by thinking and analyzing them.  
I made plans or a resolution to avoid such problems in the future.  
I ate something to get over my bad mood.  
I went to my favorite place in nature.  
I wrote about my feelings in a diary, letter or e-mail.

I withdrew from or avoided the situation.  
 I tried to not let my feelings show, to suppress any expression.  
 I talked to someone about my feelings.  
 I tried to be grateful for the things in my life that are going well.  
 I went for a walk downtown.  
 I thought about something to distract myself from my feelings.  
 I drank coffee or caffeinated beverages.  
 I did something fun, something I really enjoy.  
 I prayed, put my faith in God, or did something religious.  
 I watched TV, read a book, etc., for distraction.  
 I used alcohol to get out of a bad mood.  
 I talked to an advisor or mentor.  
 I socialized to forget my mood.  
 I tried to reinterpret the situation, to find a different meaning.  
 I tried to accept it as my faith, what will be, will be.  
 I let my feelings out by venting or expressing them.  
 I went to my favorite place in an urban setting.  
 I kept to myself, I wanted to be alone.  
 I treated myself to something special.  
 I tried to put things in perspective.  
 I tried to think about those things that are going well for me.  
 I laughed, joked around, tried to make myself or others laugh.  
 I compared myself to people who are worse off.  
 I tried to find something good in the situation.  
 I worked on something or stayed busy to forget my mood.  
 I played sports, exercised.  
 I slept or took a nap.  
 I went for a walk in the forest, in a park, on the beach or some other natural setting.  
 I went out of my way to help someone.  
 I daydreamed of the time when I will not have this problem.

Now please choose a number from the following scale to indicate **how effective** you have perceived each behavior to be in influencing your feelings of **sadness**.

- 0=Not at all effective
- 1=Hardly at all effective
- 2=Sometimes effective
- 3=Moderately effective
- 4=Often effective
- 5=Very often effective
- 6=Almost always effective

### 3. Satisfaction with life

Below are five statements with which you may agree or disagree. Using the 1-7 scale, indicate your agreement with each item by choosing the appropriate number following that item. Please be open and honest in your responding.

- 1=Strongly disagree
- 2=Disagree

- 3=Slightly disagree
- 4=Neither agree nor disagree
- 5=Slightly agree
- 6=Agree
- 7=Strongly agree

In most ways my life is close to my ideal.  
The conditions of my life are excellent.  
I am satisfied with my life.  
So far I have gotten the important things I want in life.  
If I could live my life over, I would change almost nothing.

#### 4. Emotional well-being

These questions are about how you feel and how things have been with you **during the past 4 weeks**. For each question, please give the answer that comes closest to the way you have been feeling.

- 1=All the time
- 2=Most of the time
- 3=A good bit of the time
- 4=Some of the time
- 5=A little of the time
- 6=None of the time

How much of the time during the past four weeks...

- Have you been a very nervous person?
- Have you felt so down in the dumps that nothing could cheer you up?
- Have you felt calm and peaceful?
- Have you felt downhearted and blue?
- Have you been a happy person?

#### 5. General health

How is your health at the moment?

- 1=Poor
- 2=Quite poor
- 3=Neither poor nor good
- 4=Quite good
- 5=Excellent

You have now completed the questionnaire. Thank you for your cooperation!