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Editor's note

The present issue of SSI publishes the results of a large-scale survey on the frequency of different emotions in everyday life, conducted by Klaus R. Scherer, Tanja Wranik, Janique Sangsue, Véronique Tran and Ursula Scherer from the Emotion Research Group in Geneva, Switzerland. It is hoped that the presentation of the data in this article, unusual from the standpoint of mainstream psychological research, may stimulate debate on currently neglected issues in emotion research. In order to encourage an interdisciplinary, phenomenon-oriented approach, rather than sticking to a narrow paradigm, and to confront a variety of approaches, we have invited leading scholars from various disciplines to comment on this article.

Klaus R. Scherer, Tanja Wranik, Janique Sangsue,
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Emotions in everyday life: probability of occurrence, risk factors, appraisal and reaction patterns

Abstract. *In a quasi-representative survey, 1242 respondents were asked to describe a situation or event that had elicited an emotion on the previous day. They were also asked to report on the respective appraisal and reaction patterns as well as to verbally label the experience. In addition, they completed a rating list on the relative frequency of experiencing each of 14 emotions and a medical symptom list. The data are*

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interpreted in terms of the odds of experiencing a particular type of emotion in everyday life, mediated by “risk factors” such as culture, socio-demographic background, personality, health, and situational context. Further results concern typical appraisals and reactions for different emotions and relationships between everyday emotions and subjective well-being (life satisfaction and subjective health).

Key words. *Cultural differences – Dispositional emotionality – Emotional response organization – General population survey of emotion – Health and emotion – Risk factors for emotion elicitation*

Résumé. *Dans une étude quasi-représentative, nous avons interrogé 1242 sujets sur le rappel en mémoire d'un événement ayant généré une émotion au cours de la journée précédente, en leur demandant de décrire verbalement l'expérience émotionnelle en question et les patterns de réaction correspondants. Ils ont également complété un questionnaire quant à la relative fréquence avec laquelle ils ressentent 14 différentes émotions, ainsi qu'une série de symptômes physiques. Les données ont été interprétées en termes de probabilités d'éprouver tel ou tel type d'émotions dans la vie courante, modulées par des facteurs de risque tels que le contexte socio-culturel, le profil socio-démographique, la personnalité, la santé, et l'endroit dans lequel les émotions ont été éprouvées. D'autres résultats portent sur l'attribution causale et les patterns de réactions typiques à différentes émotions, ainsi que sur les relations entre expériences émotionnelles et bien-être subjectif (satisfaction de vie et santé subjective).*

Mots-clés. *Différences culturelles – Etude des émotions sur population générale – Facteurs de risque des émotions – Prédilection émotionnelle – Réponses émotionnelles – Santé et émotion*

Introduction

Imagine that fate has ordained you to experience an emotion today. What type of emotion is it likely to be? You could argue that there is no way of knowing because emotions are elicited by events (or memories of events) and the way each individual interprets them. Indeed, appraisal theory of emotion (see Scherer et al., 2001, for an overview) holds that even identical events are evaluated differently by different individuals and may produce various kinds of emotions. However, just as daily hassles are much more frequent than major life events (Lazarus, 1991; Lazarus and Folkman, 1984), your chances of experiencing a minor episode of anger or irritation today are much higher than your chances of suffering

from deep sadness. In consequence it should be possible to predict the odds of an average person in an average environment experiencing a certain type of emotion on a given day. One way to examine these odds empirically is to determine the frequency with which particular emotional experiences are reported in a population, adopting what is called an "actuarial" approach to studying emotional life.

Experimental emotion psychologists typically induce the emotions they study. Due to practical and ethical constraints, these states are often low in intensity and short in duration. In contrast, emotion researchers who study real-life emotional experiences via verbal report focus on salient, sometimes intense, emotional experiences that are engraved in memory. For example, Scherer and his collaborators (Scherer, 1993; Scherer and Wallbott, 1994; Scherer et al., 1983) studied real-life emotional experiences by asking large groups of students in many different cultures to provide detailed verbal reports on emotion experiences like anger, fear, sadness, joy, disgust, shame or guilt within the last few weeks or months (International Study of Emotion Antecedents and Reactions, ISEAR). Although these reports reflect actual experiences, they are limited to major emotion categories and may not be typical for everyday emotions. Yet these data do provide at least some clues about the relative frequency of certain emotions: Scherer and his collaborators argued that the amount of time that passed between the event itself and the report of the emotional experience might be interpreted in terms of the relative frequency of the respective emotions. For rare events, such as intense sadness, one has to go back farther in time, often several months, to find an appropriate example in memory, whereas more frequent emotional experiences, such as minor anger episodes, come readily to mind by recalling events from previous days or weeks. Based on this assumption and their empirical findings, Scherer and his collaborators suggested that anger and joy occur more frequently than fear or sadness (Scherer and Wallbott, 1994: 319).

However, such inferences are suggestive at best. In order to determine the "risk" of experiencing a particular type of emotion on a given day, one needs a representative survey concerning the incidence of many different kinds of emotions, at different degrees of intensity, within a comparable period of time. The method of choice is *event sampling* rather than *time sampling* (see Lonner and Berry, 1986) since we are interested in bona fide emotions, defined as the synchronized reaction of different organismic subsystems to

the appraisal of an event as being of major pertinence to the individual (Scherer, 2001a). While there are now many studies using experience sampling approaches, i.e. time sampling of changes in affective states, often with college students (Bolger et al., 2003; Reis and Gable, 2000), we have been unable to find studies in the literature that used event sampling in a representative survey of the general population (see also the comparison of different sampling methods in the General discussion section). The work that comes closest is Averill's survey of anger based upon both students and community residents (Averill, 1982) and a study by Scherer and Tannenbaum (1986) in which 223 respondents in an omnibus telephone survey in the San Francisco Bay Area were asked to think of and describe their reactions to a recent situation that had aroused very strong feelings in them.

Our aim was to determine the relative frequency of emotions in everyday life by using standard survey methodology. In the field as in the laboratory, emotions are difficult to study because of their personal and often intimate nature. For obvious reasons many individuals refuse to disclose highly personal information in face-to-face or telephone interviews, especially when this might reflect badly upon them. In these cases the method of choice is an anonymous mail survey with a format designed to optimize the response rate (Dillman, 1991; Fox et al., 1988). Concretely we asked an approximately representative adult sample from the German- and French-speaking parts of the Swiss population, by anonymous questionnaires sent to randomly selected households, to report an emotion they had experienced the day before and to describe the eliciting event and their reaction patterns. By focusing the respondents' attention on *yesterday*, we hoped to achieve a quasi-representative sampling of everyday emotional events, allowing us to roughly estimate the odds of experiencing certain emotions on any given day.

It could be argued that inferring odds based only on the observed frequency of responses in a given sample studied at a particular point in time might result in a biased estimate of *general* odds. Even if the sample is considered to be representative for the population, world events or the general political and economic climate at the time of data collection could influence the responses significantly. In order to examine the stability of the relative frequencies with which certain types of emotions are reported, we obtained two separate samples, four years apart. In addition we specifically scheduled the second wave after a major world event, the terrorist

attacks on the United States on September 11, 2001 which was reported to have had an extremely strong effect on the general emotional climate all over the world (see e.g. Becker et al., 2002; Hagerty, 2001; Ledoux and Gorman, 2001; Linley et al., 2003).

We submit that the relative frequency of different emotions, as reported by a reasonably representative sample of a population for *yesterday*, should allow a rough estimate of the general probability that these emotions will occur on any given day. Focusing on a very recent experience should also minimize the problems of retrospective emotion reports, which may be affected by memory biases. Sampling the emotional experiences at two time points, four years apart, and in very different emotional climates should indicate the stability of these estimates for a given population.

Presumably the odds of experiencing a certain type of emotion are not the same for everybody. Popular lore has it that men experience anger more frequently than women. In addition to gender, marital status and general living conditions (i.e. living alone or with a partner, with or without children) could play a role. Age is believed to lead to flattened affect, and thus older people might have fewer or less intense emotions. Education or professional activity might also make a difference. To evaluate the existence of such demographic "risk factors" (or propensities to feel particular emotions), we obtained socio-demographic background information from our respondents.

Another important risk factor could be the culture one lives in. For example, Scherer and his collaborators (Scherer et al., 1988) were able to show that certain types of emotion-eliciting situations were more likely to occur in some cultures than in others. Apart from the differential likelihood of certain events, the probability of experiencing certain emotions may also depend on economic factors, the degree of urbanization or cultural belief systems (e.g. belief in supernatural forces; Scherer, 1997). In the present study, we compared samples from the German- and French-speaking parts of Switzerland, a cultural divide that goes well beyond language (see e.g. Brüngger, 2000; Läge et al., 2000).

Another type of risk factor is related to personality. Ever since antiquity, starting with Galen's classification of the four different humors (Irwin, 1947), it has been assumed that individuals differ in their predisposition to experience certain emotions. There is much literature on hysteric, neurotic or anhedonic personalities (Kellerman, 1990), or, in more recent terminology, on trait anger,

trait anxiety, or trait positive–negative affect (Spielberger et al., 1999; Watson et al., 1988). These trait differences in emotionality should increase the odds of experiencing trait-congruent emotions. In other words, individuals high on trait anxiety should run an increased risk of experiencing anxiety bouts, individuals high on trait anger should get irritated more often, and so forth. In order to examine such *personality-related risk factors*, we obtained self-report data on the frequency with which our respondents generally experience particular emotions, a measure that reflects a predisposition to experience certain emotions rather than others. Of course many other individual factors may also play a role; for instance, appraisal theory suggests that certain persons are more or less prone to experience certain types of emotions because of differences in goals, values and coping potential (Van Reekum and Scherer, 1997).

Another possible risk factor, potentially related to personality, is psychosomatic health. Individuals suffering from particular kinds of illnesses might be more likely to experience certain types of emotions; individuals who are not well may often feel irritable, anxious or depressed. So far most of the research has looked at emotions as possible predictors of ill health. However, it is not impossible that ill health (objective and/or subjective) increases the risk of experiencing certain emotions more frequently. For example, there are studies on whether depression can cause cancer (Giese-Davis and Spiegel, 2003) or whether hostility can influence cardiovascular diseases (Boltwood et al., 1993; Friedman and Booth-Kewley, 1987; Spielberger et al., 1988). Generally these studies do not assume a direct link but rather a relationship that is mediated by coping strategies and social support. Yet it is possible that the relationship is bidirectional and that long-term psychosomatic problems may affect the likelihood of responding with certain emotions rather than others. We used a medical symptom check list to examine the role of subjective health.

Finally there are *environmental or contextual* risk factors. The likelihood of experiencing fear or anger is particularly high in traffic situations (Scherer et al., 1983), whereas the home or the workplace may increase the odds for other types of emotions. We therefore obtained a report on where the emotion episode had taken place.

In addition to studying the frequency and the effects of these risk factors for certain types of emotion, we examined two other issues:

(a) the existence of typical patterns of appraisal and reactions for specific emotions and (b) the relationship between emotional experience and life satisfaction.

A wide variety of emotion theories propose that there are specific reaction patterns for different emotions (see Scherer, 2000, for a review). For example discrete-emotion theory postulates neuro-motor programs and corresponding reaction patterns for a limited number of basic emotions (see e.g. Ekman, 1992; Tomkins, 1984). Componential theories assume systematic response differentiation on the basis of typical appraisal results (Ellsworth, 1991; Frijda, 1987; Lazarus, 1991; Roseman, 1984; Scherer, 1988; Smith and Ellsworth, 1985). Again much of the information available in the literature on the nature of emotional reactions in everyday life is based on prototypical patterns of selected exemplars and may thus not be representative for the totality of emotional responding. In addition most research has been conducted with psychology students and cannot be generalized to emotional life in the population at large. Finally many studies that have attempted to examine the emotion specificity of physiological reaction patterns by inducing emotions such as fear or anger in the laboratory (and have generally failed to find much specificity), can be criticized for lack of ecological validity or insufficient emotional intensity (see Stemmler, 2003).

We decided to study response specificity on the basis of verbal reports concerning different behavioral modalities and physiological symptoms. Although verbal report may not be the best method for obtaining precise data on expressive and physiological reactions, it is the only feasible approach to obtain information on real-life, everyday emotions and the reaction patterns they generate in a large-scale survey of the general population. In addition this approach allows studying demographic, cultural, personality, health and environmental or contextual factors as possible mediating variables for appraisal and reactions.

It is often assumed that the nature of everyday emotional experience may have an important effect on subjective well-being or even overall life satisfaction (Diener and Lucas, 1999; Diener *et al.*, 1999, 2003). Therefore, to examine whether everyday emotions contribute to subjective well-being and life satisfaction (as compared with emotional reactions to major life events, which are known to have strong effects, at least in the short run; Miller, 1996), we also asked respondents to rate their degree of life satisfaction.

In sum this study investigates emotional experiences on a particu-

lar day, namely the day of yesterday, by using reports from a randomly selected, quasi-representative sample of the German- and French-speaking parts of the Swiss population. In particular the following questions are addressed:

1. What is the frequency of different emotions in everyday life? Is there a relatively stable frequency distribution over time from which the odds that a particular emotion will occur on any one day can be derived?
2. How do specific “risk factors”, such as culture, socio-demographic factors, personality, health and situational-context variables mediate the odds of experiencing a particular type of emotion on any one day?
3. Do respondents report typical appraisals or reaction patterns for the different classes of emotions? How are these patterns affected by the risk factors mentioned above?
4. What is the relationship between everyday emotions and subjective well-being, in particular self-reported life satisfaction?

As the introduction suggests, this article touches on a large number of issues, many of which have been explored in earlier research. Unfortunately the massive amount of data to be reported and interpreted prevents us from systematically citing the large number of studies pertinent to this work.

Method

Sample selection

In the spring of 1997, a two-page survey questionnaire, developed in French and German, was sent to 5940 households in the French- and German-speaking parts of Switzerland. The households were selected randomly from a computerized telephone directory issued by Swisscom, the Swiss national telephone company.¹ In order to sample the largest two of the four linguistic groups in the country, an automatic sampling method targeted 40 percent of respondents from the French-speaking regions and 60 percent from the German-speaking regions.² Addresses from the bilingual cantons (states) of Fribourg, Berne and Valais were not included because it was difficult to determine whether a particular household was

German- or French-speaking. In addition addresses from Ticino were not included because this canton is mostly Italian-speaking.

To increase the chances of obtaining a representative sample, the cover letter specified which person in the household should ideally respond to the questionnaire. Half the letters asked for a female to respond, and half for a male. In addition preferred age categories were indicated: 12–18 years, 19–30 years, 31–60 years, or over the age of 60 years. If no person corresponding to the desired profile was living in the household, we asked the recipient to respond him- or herself. In the autumn of 2001, the same letter and questionnaire were sent to 3000 participants, using exactly the same procedure as in the 1997 wave.

Participants

In 1997, 1080 questionnaires (18 percent) were returned. In 2001, 440 questionnaires (15 percent), were returned.³ In a review of the literature on mail surveys, Chiu and Brennan (1990) mention that response rates between 10 percent and 30 percent are not uncommon. In an early meta-analysis, Yu and Cooper (1983) report an average response rate of 47 percent. However, many of these studies were done within organizations or with professionals in different areas, including prior announcement of the survey and reminders. Based on the general experiences reported in this literature, one would not expect more than a 20–30 percent response rate for one-shot surveys of the general population, based on telephone-book addresses. It should also be noted that, in this particular case, a sizeable number of non-responses was likely to be due to the selected individuals not having experienced a strong emotion on the previous day (see Results section).

Of the total number of questionnaires, 278 were eliminated because of one of several problems: (a) respondents had filled out only one of the two questionnaire pages; (b) respondents did not specify a situation that had provoked an emotion; (c) respondents were under the age of 18 or over the age of 80. These cut-off points were chosen because we had only very few respondents below 18 and above 80, making statistical inferences for these groups difficult.

In consequence all analyses reported below were based on the responses of 1242 individuals: 906 in 1997 and 336 in 2001. Table 1

TABLE 1
Sample characteristics

	1997 study		2001 study		Total
	<i>N</i>	%	<i>N</i>	%	
Gender					
Female	466	52.1	179	53.6	645
Male	429	47.9	155	46.4	584
Language group					
French-speaking	315	35.4	86	25.6	401
German-speaking	576	64.6	250	74.4	826
Marital status					
Single	202	22.7	89	27.0	291
Married	529	59.5	179	54.2	708
Separated, divorced, widowed	158	17.8	62	18.8	220
Age category					
Under 26	70	8.4	25	8.3	95
26–59	580	70.0	187	61.7	767
Over 59	179	21.6	91	30.0	270
Education level					
General education	447	50.5	155	46.7	602
Higher education	438	49.5	177	53.3	615
Nationality					
Swiss	736	85.8	300	92.0	1036
Other	122	14.2	26	8.0	148
Living arrangement					
Alone	203	23.6	82	24.9	285
With a partner	590	68.6	220	66.9	810
Other	67	7.8	27	8.2	94
Parental status					
Living with children	372	51.7	103	32.0	475
Without children	348	48.3	219	68.0	567
Total number of questionnaires	906		336		1242

Note: The *N* for the subcategories do not always add up to the total *N* because of missing values (1–12% missing values, depending on the variable). Percentages are based on the number of valid cases.

provides a detailed description of the socio-demographic composition of the two samples.

Questionnaire

The two-page questionnaire was divided into four sections. The first section requested that participants supply general socio-demographic information concerning gender, age, nationality, education level, marital status, living arrangement, number of children and general life satisfaction.

The second section contained questions pertaining to the respondent's general health satisfaction and specific health symptoms. This section contained the original French or German patient-questionnaire versions of the Prime-MD (Spitzer et al., 1994, 1999), a validated symptom checklist for early detection of psychological and somatic disorders.⁴

The third section asked respondents to describe a situation that had provoked an emotion on the previous day. The following is an English translation of the French or German instructions in the questionnaire:

Please recall the day of yesterday and describe, in as much detail as possible, an event that caused you to experience an emotion. (Important: Please focus *only on yesterday*. Make sure you write down one situation or event, even if your emotional reaction was weak.)

This question specifically asked for an event from the previous day to ensure that individuals would not search their memory for exceptional types of emotional events that had happened to them in the past. After they had described the situation, participants were asked to respond to a series of more specific questions concerning the event and the emotion: (a) the situational context of the experience, (b) the duration of the emotional feeling, (c) the origin or cause of the event, (d) the nature of a potential interaction partner with whom the experience was shared, (e) the intensity of the feeling, (f) the bodily symptoms experienced, (g) the types of expressive reactions shown, (h) the type of verbal utterance produced, (i) changes in voice and speech patterns, and (j) attempts to control the emotion. Finally we asked the respondents to label the emotion they had experienced in their own words (following the procedure described in Wallbott and Scherer, 1989).

In the fourth section of the questionnaire, we asked the participants to rate the frequency with which they habitually experienced particular emotions. Fourteen emotions – sadness, happiness, anger, disgust, surprise, fear, irritation, shame, contempt, guilt, anxiety, pleasure, pride, despair (always listed in this order)⁵ – were rated on a 4-point frequency scale (almost once a day, approximately once a week, approximately once a month, rarely or never).

Procedure

The addresses generated with a random selection procedure from the electronic telephone directory were transformed and then printed directly onto A5-size envelopes. Envelopes were sent out with either a German or a French version of the cover letter (one page) and the questionnaire (a single sheet with questions printed on both sides) as well as a pre-stamped return envelope.

The cover letter briefly introduced the Geneva Emotion Research Group and explained the purpose of the survey, described as the study of possible relationships between emotions and health. Respondents were told that their household had been randomly selected from an electronic telephone directory and were reassured about their anonymity. The cover letter also indicated which person in the household should ideally respond to the questionnaire (male or female and a particular age range) or invited the recipient to respond him- or herself in the event that no person corresponding to the desired profile lived in the household. They were asked to return the enclosed questionnaire as soon as possible after reception, using the included pre-stamped envelope.

Coding of the responses to the health questions

The answers to the questions in the Prime-MD were transformed into six variables as suggested by the developers of the instrument (Spitzer et al., 1994): general health perception, somatic symptoms, eating disorders, depression symptoms, anxiety symptoms and alcohol symptoms. To create binary variables, we dichotomized these scales by using median splits.

Coding of free responses

Respondents were requested to describe the nature of their emotional experience in their own words by choosing a verbal label or a brief expression. In order to make these responses amenable to statistical analysis, we coded the free descriptions into a more limited number of emotion categories. Based on empirical studies of the number and type of verbal labels that are generally considered as emotions in a wide sense of the term (Frijda et al., 1995; Gehm and Scherer, 1988), a list of 38 categories was established (see column 1 in Table 2). With the aid of published thesauri for French and German, we then developed a coding system based on a list of synonyms or highly related terms for each of these emotion categories. An Excel macro program was written that automatically searched the free descriptions for the roots and stems of the synonymous terms for each category and assigned a category name to each response on the basis of the first stem or root identified in the expression used by the respondent. If a second word or phrase within the descriptions fitted a category different from the first, the program would report it in another column. This procedure allowed identification of emotion blends.⁶

Data transformation and statistical analyses

Because most of the variables consisted of nominal scales, the appropriate analysis method was the use of contingency tables and chi-square tests. In order to apply this methodology consistently, we categorized the variables into ordinal (e.g. intensity of the emotion episode) or interval scales (e.g. chronological age) by combining levels (in those cases where a distinction between four or five categories seemed indicated) or using median splits (in those cases where a binary distinction between low and high seemed reasonable). For reporting purposes, the observed frequencies in each contingency table were standardized by computing column percentages. Although the chi-square statistic estimates the significance of an association within the table, it provides no indication of the strength, location or direction of the relationship. We therefore examined the *adjusted residuals*, which reflect the difference between observed and expected frequencies. Adjusted residuals can help identify the

particular categories responsible for a significant chi-square because they tend to be normally distributed with a mean of 0 and a standard deviation of 1. In consequence, from a comparison of the absolute values of the adjusted residuals with the 5 percent or 10 percent standard normal deviate, namely 1.96 or 2.54, one obtains an estimate that can serve as the basis for an interpretation of the adjusted residuals in the table (Everitt, 1977: 46–7).

Although most variable scales were designed to have reasonable experiential anchors for the respondents, there was no obvious reference point to determine how often one generally experiences particular emotions. Respondents may have a tendency to over- or underestimate general frequency, independent of the nature of the respective emotion, and exhibit a general response tendency to use different regions of the ordinal 4-point scale. We therefore used scale ipsatization (within respondent *z*-score standardization of scores) to eliminate individual response-tendency effects (e.g. differential use of the extremes) and to render individual judgments directly comparable across respondents.

We exclusively used the standard $p < .05$ value of the significance tests to decide which results to report because we assumed that significant effects are more likely to replicate. We did not assume that these p values could be used to test hypotheses. In consequence, given the descriptive and exploratory rather than hypothesis-testing nature of the analyses, we decided not to adjust the significance levels.

Results

The four questions at the end of the Introduction are used to organize the Results section. For each of these questions, we first present the results and then discuss their implications.

Frequency distribution for different types of emotions and their temporal stability

Results

It should be noted at the outset that the results of this study do not provide precise evidence about the frequency with which people

experience emotions in their everyday life. We asked respondents to recall yesterday and to report "an event that provoked an emotion". Although we specifically requested that they "write down one situation or event, even if your emotional reaction was weak", we must assume that individuals who did not think they had experienced an emotion-eliciting event *yesterday*, or thought that it was too weak to report, did not return the questionnaire. Thus many non-responses may have occurred because the respective individuals did not experience a strong emotion *yesterday* and presumed that they did not qualify for the study. Therefore our results are limited to emotions above a certain threshold of feeling intensity, which may vary over respondents. Furthermore we asked respondents to report only one emotion experience for the previous day. It is of course possible that some of the respondents experienced several strong emotions on that day, which would increase the general likelihood of emotion experiences.

In consequence the reported findings must be interpreted as indications of the relative frequency of specific emotions for individuals who experienced at least one emotional state of above-threshold intensity. We can try to estimate the relative frequency of these cases by subtracting the average non-response rate in postal surveys (let us assume 65 percent; see above) from our total non-response rate (approx. 83 percent) and consider that the remaining non-responses (about 18 percent) are cases in which the respondent would have returned the questionnaire if he or she had experienced a sufficiently strong emotion. According to this estimate, one out of two individuals would be likely to experience at least one strong emotion on a given day. It is possible of course that some people experienced two or more strong emotions on the previous day. Because our questionnaire limited the report to one emotion, they could not have reported these events. In order to study the relative frequency of emotional experiences for a given individual over a certain time period in a precise fashion, the experience sampling method (Bolger et al., 2003; Reis and Gable, 2000) has to be employed.

Of the 1242 respondents retained for analysis, 212 (17.1 percent) did not provide an emotion label or description for the situation they described. Because it was not possible to ascertain the reason for this missing information in otherwise completed questionnaires, we treated these cases as missing data. The remaining 1030 respondents labeled the quality of their emotional experience in their own

words, using a wide variety of descriptors – approximately 775 different words, word combinations and phrases. For the quantitative analyses, we reduced this rich variety to a smaller number of emotion classes by using the coding system described in the Method section. Table 2 shows the results. The first column of figures lists, in descending order of size, the frequency of the *total occurrence* of each emotion category, irrespective of whether it was reported as a “pure” emotion (i.e. cases in which the coding program did not identify members of a second, different class in the description) or as an “emotion blend” (cases in which the coding program identified two predefined terms). The remaining columns in the upper part of the table list the frequency and the percentages of “pure” emotions, for both years combined and separately for 1997 and 2001.

The lower part of the table shows the relative frequencies of three types of blends: negative blends (two different negative emotions), positive blends (two different positive emotions) and mixed blends (a negative combined with a positive emotion). Because of the large number of different types of blends and the infrequent occurrence of these combinations, it was not viable to create further sub-categories. The most frequent instance of a specific blend is anger/sadness, which was mentioned 12 times (1 percent). The following negative blends each occurred in about 0.5 percent of the cases: despair/tension, anxiety/fear and anxiety/sadness. Only one positive blend occurred with a similar frequency: relief/happiness.

Overall, 73.4 percent of the 1030 respondents reported a pure emotion, and 21.8 percent a blend of two different emotions, mostly mixtures between two emotions of the same valence. In 4.8 percent of the cases, labeled “unclassified” in Table 2, the coding program could not associate the response with one of the 38 predefined emotion categories.

We first tested for any significant emotion frequency differences between 1997 and 2001 (for those cases in which cell size allows computation of chi-square) and found that respondents reported more joy in 1997 compared with 2001 (chi-square = 6.94, d.f. = 1, $p < .01$). However, given the large number of tests, a single significant effect could occur by chance; therefore it seems inappropriate to interpret this difference. In view of the remarkable similarity of the frequency profile across emotions for the two waves of the survey (profile correlation $r = .90$, $p < .001$), we ran all further analyses using the combined frequency data.

Table 2 shows that only 8 emotion classes were mentioned by more than 40 participants. The remaining 30 categories occurred much less frequently. To increase the power of statistical analyses, we therefore decided to combine emotions into higher-order classes or "emotion families". Due to presumed similarities in antecedents and reaction profiles, differences between members within such families should be much smaller than between families. However, to supplement theoretical intuitions about which emotions to combine into families, we also used profile correlations.⁷

Profiles were constituted by 9 emotion characteristics, 1 relating to an antecedent appraisal, (a) the *perceived cause* of the event (the responsible agent), and 8 relating to different types of reaction parameters; (b) the *intensity* of the emotional experience; (c) its *duration*; (d) the number of *bodily symptoms* experienced; (e) the types of *expressive reactions*; (f) with *whom* respondents had *spoken* to share the emotion; (g) the type of *verbal utterance* produced; (h) changes in *voice and speech patterns*; and (i) if there had been an attempt to *control* the emotion. We standardized these variables (z-scores) and computed their means for the 10 most frequently reported pure emotion categories (see Table 2).⁸ The correlations between the 10 emotions across the profiles of the 9 characteristics are shown in Table 3. On the basis of these results, we identified 6 emotion categories for further analyses. First, joy, happiness and contentment, which showed high positive profile correlations, were combined to form a "happiness family". Second, anger, irritation and frustration/disappointment, which also correlated highly, were combined to form an "anger family". If one combines the frequency percentages for pure emotions in Table 2, one obtains 16.8 percent for the happiness family and 15.6 percent for the anger family. Finally, due to conceptual reasons and the absence of strong and unique correlations between the four remaining emotions, we decided to keep the individual categories for these emotions.

Discussion

The first conclusion to be drawn from the data concerns the stability of the relative frequencies of the different emotion classes over time. Indeed the frequency distribution is virtually identical, although the two waves were four years apart, and the second wave occurred only weeks after September 11, 2001, an event that supposedly

TABLE 2
Frequency distribution of pure emotions and emotion blends

Emotion	Total multiple responses	Emotions both years	Percent both years	Emotions 1997	Percent 1997	Emotions 2001	Percent 2001
Happiness	152	94	9.1	69	8.8	25	10.1
Anger	145	89	8.6	58	7.4	31	12.5
Anxiety	99	67	6.5	52	6.6	15	6.0
Joy	91	53	5.1	47	6.0	6	2.4
Sadness	90	55	5.3	40	5.1	15	6.0
Frustration/disappointment	67	41	4.0	33	4.2	8	3.2
Stress	63	46	4.5	30	3.8	16	6.5
Despair	62	43	4.2	30	3.8	13	5.2
Contentment	57	27	2.6	19	2.4	8	3.2
Irritation	42	31	3.0	23	2.9	8	3.2
General negative	38	35	3.4	35	4.5	0	0.0
General positive	28	25	2.4	24	3.1	1	0.4
Compassion	25	14	1.4	6	0.8	8	3.2
Pleasure/enjoyment	22	16	1.6	15	1.9	1	0.4
Pride	21	9	0.9	7	0.9	2	0.8
Fear	21	12	1.2	12	1.5	0	0.0
Stupefaction	21	13	1.3	13	1.7	0	0.0
Surprise	20	10	1.0	9	1.2	1	0.4
Guilt	17	7	0.7	5	0.6	2	0.8
Relaxation/serenity	17	8	0.8	6	0.8	2	0.8

Relief	14	6	0.6	3	0.4	3	1.2
Love	11	8	0.8	7	0.9	1	0.4
Amusement	11	8	0.8	6	0.8	2	0.8
Gratitude	10	5	0.5	2	0.3	3	1.2
Hate	8	2	0.2	2	0.3	0	0.0
Interest	7	5	0.5	4	0.5	1	0.4
Disgust	6	3	0.3	3	0.4	0	0.0
Longing	6	5	0.5	3	0.4	2	0.8
Being touched	6	4	0.4	1	0.1	3	1.2
Admiration/awe	5	2	0.2	2	0.3	0	0.0
Dissatisfaction	5	3	0.3	3	0.4	0	0.0
Hope	4	1	0.1	1	0.1	0	0.0
Neutral	4	4	0.4	4	0.5	0	0.0
Jealousy	3	2	0.2	1	0.1	1	0.4
Boredom	2	1	0.1	1	0.1	0	0.0
Envy	2	1	0.1	1	0.1	0	0.0
Shame	2	1	0.1	1	0.1	0	0.0
Contempt	2	0	0.0	0	0.0	0	0.0
<i>Subtotal pure emotions</i>	<i>1206</i>	<i>756</i>	<i>73.4</i>	<i>578</i>	<i>73.9</i>	<i>178</i>	<i>71.8</i>
Negative blends	—	121	11.7	83	10.6	38	15.3
Positive blends	—	88	8.5	60	7.7	28	11.3
Mixed blends	—	16	1.6	12	1.5	4	1.6
<i>Subtotal blends</i>	<i>—</i>	<i>225</i>	<i>21.8</i>	<i>155</i>	<i>19.8</i>	<i>70</i>	<i>28.2</i>
Unclassified	—	49	4.8	49	6.3	0	0.0
<i>Total</i>	<i>—</i>	<i>1030</i>	<i>100</i>	<i>782</i>	<i>100</i>	<i>248</i>	<i>100</i>

TABLE 3
Correlations between the antecedents and reaction profiles of 10 frequently reported emotion categories

Emotion	Anger	Anxiety	Contentment	Frustration	Happiness	Irritation	Joy	Sadness	Stress
Anger									
Anxiety	−.05								
Contentment	−.80*	−.49							
Frustration	.57	.54	−.73*						
Happiness	−.42	−.76*	.67	−.69*					
Irritation	.76*	.29	−.84**	.74*	−.45				
Joy	−.61	−.62	.79*	−.69*	.78**	−.82**			
Sadness	−.32	.44	.16	.13	−.46	−.34	.00		
Stress	.44	.77*	−.77*	.76*	−.79*	.77*	−.91**	.24	
Despair	.12	.45	−.45	.48	−.42	.31	−.30	−.18	.28

* $p < 0.05$; ** $p < 0.01$.

permanently changed the emotional climate of many countries around the world. We can tentatively conclude that everyday emotions, elicited by significant events in the day-to-day life of the individual, are not very strongly affected by world events or socio-historic changes. Rather, everyday emotions probably play an important adaptive function in preparing an individual's reactions to significant events in his or her environment. This does not preclude that dramatic world events can change general mood states or the emotional climate in a population.

The high degree of temporal stability justifies one of the propositions made in the Introduction: namely that empirically observed frequencies could be used to determine the odds that a particular emotion will occur on any one day. Thus one could assume that individuals have about a 17 percent chance of experiencing happiness or joy tomorrow and that the odds are almost equally high (16 percent) of experiencing irritation or anger. The happiness and anger emotion categories clearly dominate in terms of overall frequency, corroborating a prediction made by Scherer and Wallbott (1994: 319) on the basis of how far back in their memory respondents had to go to find an appropriate instance of the different emotions (see Introduction).

Emotion theorists consider happiness and anger to be two major basic emotions. What about the other emotions found on the lists of "basic" or "fundamental" emotions? The most frequent is sadness, at 5.3 percent. It may make intuitive sense that events causing intense sadness – such as the death of a close person (or of a pet) or the end of a relationship (see Scherer and Tannenbaum, 1986: 302–4, for causes of sadness) – do not occur on a daily or weekly basis. In fact Scherer and Wallbott (1994: 318) found that 72.4 percent of their respondents reported that the last sadness experience they remembered had happened months or even years ago. The corresponding percentage for fear was 74.4 percent. It may therefore not be surprising that our sample reported only 1.2 percent outright fear situations. Although it may be possible that less intense sadness or fear experiences occur more frequently, these do not seem to be consciously perceived or remembered. The rare occurrence of true sadness in real life renders the frequent use of scales with a "happy–sad" continuum in much of the social-psychological research on emotion somewhat suspect.

As to fear, situations like being surprised by a thunderstorm in the mountains or being threatened by muggers (see Scherer and

Tannenbaum, 1986) fortunately do not occur every day or even every month. On the other hand, earlier research had shown that many respondents in western countries reported near-miss accident situations in road traffic as fear exemplars (Scherer et al., 1988). This was not the case in the present sample. One can conclude that serious fear situations are few and far between in the normal course of events. In contrast anxiety, which is often considered to be a member of the fear family, was mentioned relatively frequently in the present study (6.5 percent).

Some theorists also consider surprise, disgust and contempt (Ekman, 1992) to be fundamental emotions. In the coding scheme, we distinguished between stupefaction (1.3 percent) and surprise (1.0 percent) because there are separable semantic fields for these two concepts in German and French (see also a theoretical justification for the distinction in Scherer et al., in press). Presumably the frequency of these “surprise” emotions is relatively low because in many cases they quickly blend into other emotions, such as joy, fear or anger. Disgust was mentioned only three times in its pure form (0.3 percent) and three times in blends with other emotions, even though 43.7 percent of Scherer and Wallbott’s (1994: 318) respondents remembered an instance of disgust within the last days or weeks (which is quite frequent in comparison to anger at 46.8 percent and joy at 35.5 percent). Similarly, contempt was mentioned only twice – both times in a blend with another emotion.

The self-reflexive emotions – guilt, shame and pride – while not generally regarded as basic emotions by all theorists, also play a major role in the emotion literature. However, their actuarial frequency is relatively low: 0.9 percent for pride and 0.7 percent for guilt. Shame was mentioned only once (0.1 percent). The latter is particularly interesting in light of the possibility that, with the rise of individualism and the weakening of widely shared norms of conduct in Western society, shame, as a socializing emotion, may mutate or actually disappear (see Borg et al., 1988, for pertinent data; and Scherer, 2001b, for a speculative discussion of this possibility).

Although stress is not generally considered to be an emotion, let alone a basic one, our respondents clearly counted it in. It was reported in 4.5 percent of the cases and is thus one of the more frequent individual emotion classes. A surprisingly strong showing was also made by despair (4.2 percent), an emotion that is generally not given much attention. This emotion occurs frequently in emotion blends and, as shown by the profile analysis earlier, cannot be

considered to be simply a more intense form of sadness. Finally, emotion categories rarely mentioned in the literature, such as compassion (1.4 percent) and pleasure/enjoyment (1.6 percent), also make a stronger showing in our study than presumed basic emotions such as fear.

The remaining emotion classes are mentioned rarely: relaxation/serenity, relief, love, amusement, gratitude, hate, interest, longing, being touched, admiration/awe, dissatisfaction, hope, jealousy, boredom, envy. Given their low frequencies, it is difficult to determine whether these states occur rarely, or whether at least some of them (e.g. relaxation, dissatisfaction, gratitude, hope or interest) might not meet the criteria for the popular use of the term "emotion".

The coding program categorized a response as a "generally negative state" when encountering words like bad, unpleasant, disagreeable or lousy, instead of discrete emotion terms. These accounted for 3.4 percent of the responses. In 2.4 percent a "generally positive state" was recorded (for words such as fine, good, nice, agreeable or excellent). The potential significance of this finding is discussed below.

These data are not directly comparable to the findings from the telephone-survey study conducted by Scherer and Tannenbaum (1986), in which respondents were asked to think of a recent situation that aroused very strong feelings in them. In particular it is likely that the respondents in the Scherer and Tannenbaum study went back much farther in time than the ones in the present study and retrieved fairly intense emotion experiences. Despite the difference in method, however, these authors also found that happiness (31 percent) and anger (17 percent) were the most frequent pure emotions, with sadness (12 percent) and fear (2 percent) trailing far behind. Interestingly the most frequently reported blend in the Scherer and Tannenbaum study was also anger/sadness (25 percent), although the percentages were much higher than in the present study because respondents were given a list of eight basic emotion labels (anger, sadness, happiness, fear, shame, pride, anxiety, guilt) to rate their experience in terms of a pure or blended state. In sum the similarity of the results in the two studies, despite different methodologies and different populations (California and Switzerland), indicates a high probability of happiness or anger occurring on any one day. In contrast fear seems to be a fairly rare occurrence. Finally, anger and sadness seem to be the most frequent blends

(for example in situations where one feels betrayed by a close friend or family member).

What are the potential artifacts and biases that might have affected the data reported above? One serious contender is the prototypicality or availability bias – respondents might have responded with the most frequent, prototypical, basic emotion labels that readily come to mind. However, it should be recalled that, in section 4 of the questionnaire, respondents were asked to remember and describe a *situation*, not a label. It was only at the very end of this section that respondents were requested to label their emotion in their own words. Judging from the very large variety of single words and longer expressions that were given (775 different expressions, see above), it is unlikely that the prototypicality or availability bias had an important effect. Furthermore, if the responses had been influenced by the greater prototypicality or availability of basic emotion labels, we should have obtained much more frequent mentions of sadness, fear or disgust. As shown above, these emotions are mentioned very rarely indeed. Another possibility is that the respondents first answered the health-symptom questionnaire and that the salience of the symptoms checked may have biased their responses toward negative emotions. However, it is difficult to know in which order respondents filled out the questionnaire. The sections of the questionnaire were self-contained, and neither pages nor sections were numbered. Most likely, respondents first regarded the questionnaire as a whole and probably chose the emotional situation to report even before starting to fill out the questionnaire. Furthermore, if there had been a negativity bias in emotion recall because of reporting negative health symptoms earlier, it would be surprising to find such a large number of positive emotions.

Finally, one could assume that respondents reported mostly emotions that reflected positively upon them. Of course social desirability and self-presentation bias is an ever-present problem in all self-report research. However we believe that the anonymous format of the mail survey has greatly reduced this danger (see also McFarlane and Garland, 1994). In fact the anonymity of the response may have led to the opposite bias – respondents reporting events and feelings that they would normally not talk about.

Most importantly, respondents had a rather restricted choice. If they abided by our request to report a situation that occurred yesterday – and we have no reason to believe that those individuals

who made the effort to return the questionnaire did not fully cooperate – the margin for choosing self-enhancing emotions or the risk of an availability bias effect was probably rather small, given the limited number of emotions that might have occurred on the previous day. In consequence it is rather unlikely that the results reported here are strongly affected by response biases.

Risk factors for the experience of a particular type of emotion

Results

As described in the Introduction, a second intention was to examine socio-demographic, cultural, personality, health or situational variables as possible risk factors. For example, would an individual run a higher or lower risk of experiencing particular emotions if he or she belonged to a particular social group or was in a specific place? We decided that the *odds ratio* is an appropriate and meaningfully interpretable statistic to indicate an increased (or decreased) probability of experiencing a certain emotion because of one's socio-demographic, cultural, personality and subjective health characteristics. We therefore created 2×2 contingency tables, with the presence or absence of reported emotions in the columns and the two levels of the risk factor in the rows. Table 4 shows the results for all risk factors and emotions for which chi-square reached the 5 percent significance level. Specifically the table lists the percentages for emotions experienced in the case of presence/high frequency or absence/low frequency of a specific risk factor as compared to the overall percentage (columns 3, 4, 5), the adjusted residual (which is the same for all four cells in a 2×2 table) in column 6, as well as the odds ratio and the related information about the significance level in columns 7–9.⁹ The comparison of the percentages in columns 3 and 4 provides a general idea of the increase or decrease in the odds of experiencing a specific emotion, given the presence or absence of a risk factor.

This approach was less appropriate for situational risk factors because the places where emotions might occur (e.g. work, home) could not be reduced to a binary classification without losing essential information. Therefore Table 5 shows the respective percentages in a 4 places $\times$ 6 emotions contingency table. Instead of using a single odds ratio, we interpreted the adjusted residuals to estimate

TABLE 4
Risk factors for the experience of specific emotions

Risk factors	Emotions	% factor 1st level	% factor 2nd level	% both levels combined	Adjusted residuals	Odds ratio	Chi-square	d.f., <i>N</i>
Socio-demographic factors								
Marital status (married/not)	Anger	14.6	10.4	12.8	2.15	1.47	4.64*	1, 1219
Living conditions (with partner/alone)	Anger	14.8	10.2	13.6	1.96	1.53	3.86*	1, 1095
Cultural factors								
Region (French/German Switzerland)	Anxiety	8.2	4.1	5.5	3.00	2.09	8.85**	1, 1227
	Stress	5.7	2.8	3.7	2.60	2.12	6.51*	1, 1227
	Despair	1.0	4.7	3.5	-3.30	0.20	11.07**	1, 1227
Nationality (Swiss/other)	Stress	3.2	6.8	3.6	-2.20	0.45	4.72*	1, 1184
Emotionality factors								
Pleasure (frequent/infrequent)	Happiness	17.6	11.1	14.4	3.18	1.71	10.11**	1, 1169
	Despair	1.9	5.1	3.5	-3.02	0.36	9.09**	1, 1169

Surprise (frequent/infrequent)	Happiness	16.4	12.2	14.3	1.99	1.40	3.97*	1, 1155
	Anxiety	3.8	7.2	5.5	-2.54	0.51	6.43*	1, 1155
Pride (frequent/infrequent)	Happiness	17.2	11.5	14.4	2.75	1.59	7.54**	1, 1163
Irritation (frequent/infrequent)	Anger	15.8	10.9	13.4	2.48	1.53	6.12*	1, 1176
Sadness (frequent/infrequent)	Sadness	6.2	3.0	4.6	2.62	2.16	6.86**	1, 1169
	Stress	1.5	5.7	3.6	-3.82	0.26	14.57**	1, 1162
Anxiety (frequent/infrequent)	Anxiety	8.4	3.1	5.7	3.90	2.88	15.17**	1, 1169
Despair (frequent/infrequent)	Despair	4.8	2.4	3.6	2.23	2.07	4.99*	1, 1172
Health factors – symptoms								
Somatic (frequent/infrequent)	Happiness	11.7	17.3	14.6	-2.33	0.63	5.43*	1, 864
Eating disorder (frequent/infrequent)	Anxiety	9.8	4.9	5.6	2.55	2.11	6.48*	1, 1204
Depression (frequent/infrequent)	Anxiety	7.8	4.8	5.5	1.99	1.69	3.96*	1, 1215
	Happiness	8.8	15.6	14.0	-2.92	0.52	8.54**	1, 1215
Anxiety (frequent/infrequent)	Anxiety	7.5	3.6	5.5	3.00	2.17	8.98**	1, 1228

Notes: * $p < 0.05$; ** $p < 0.01$. 1st level = left term in parenthesis, 2nd level = right term in parenthesis. Differences in N are due to missing observations.

TABLE 5
Situational risk factors for the occurrence of the six most frequent emotions

Risk factor		Anger family	Happiness family	Emotion categories			Despair	Total
				Anxiety	Sadness	Stress		
Where								
At home	%	33.96	47.37	59.09	48.15	45.65	41.86	44.34
	AR	−3.14	0.96	2.57	0.59	0.19	−0.34	
At work/at school	%	40.88	14.04	16.67	11.11	41.30	20.93	24.86
	AR	5.57	−3.96	−1.64	−2.46	2.70	−0.62	
In a public place	%	13.21	15.20	6.06	12.96	2.17	16.28	12.24
	AR	0.44	1.43	−1.64	0.17	−2.18	0.84	
Other	%	11.95	23.39	18.18	27.78	10.87	20.93	18.55
	AR	−2.55	1.97	−0.08	1.84	−1.40	0.42	

Note: AR = adjusted residual.

the risk that certain physical locations are more or less likely to contribute to the experience of certain emotions (Everitt, 1977).

Discussion

The results shown in Tables 4 and 5 will be discussed separately for each risk factor. Before venturing into the details, it is important to discuss the potential bias that might arise from the fact that all measures were collected at the same point in time. Given the temporal contiguity of measurement, one cannot exclude a priori that an earlier measure might influence or prime responses to later measures or instruments. This is of course a standard problem for all psychological research, in the laboratory and in the field, where multiple measurements are applied in the same session (in some cases of laboratory experimentation, data are even gathered for different experimental designs). In a very large percentage of cases, background measures, including personality tests and mood ratings, are obtained conjointly with the assessment of the major dependent variables. Generally the potential priming effects of prior measures are not discussed in the respective research reports. While different measures can be obtained in a somewhat more independent fashion in laboratory or field settings where a known group of people can be studied at repeated times (although a priming effect cannot be excluded even in those cases), this is completely impossible in an anonymous survey of a quasi-representative sample. In consequence we have to live with such potential biases and examine in each case to what extent the data may have been affected.

Sociodemographic factors. Of the large number of sociodemographic variables measured (see Method section), only two can be considered as potential risk factors: marital status and living condition. Both married individuals and those living with a partner are about 1.5 times more likely to experience anger than are unmarried or single individuals. Not surprisingly these two variables are also highly correlated – 83.3 percent of the respondents living with a partner are married. Thus it is not the state of matrimony per se that generates anger but rather the frequent interactions and conflicts that arise out of a partnership.

TABLE 6
Correlations between trait emotionality categories and socio-demographic indicators

Emotions	Linguistic region	Gender	Age	Education	Nationality code	Living arrangement	With/without children	General life satisfaction
Sadness	-.02	.17**	.02	.01	.01	-.23**	.08**	-.15**
Happiness	.21**	.00	.14**	-.05	-.12**	.08*	.07*	.23**
Anger	.03	-.04	-.15**	.01	.04	.10**	-.13**	-.02
Disgust	-.16**	-.06*	.04	-.07*	.04	.03	-.00	-.08**
Surprise	.16**	-.03	.06*	.07*	-.11**	.02	.02	.20**
Fear	-.07*	.14**	-.02	-.06*	.03	-.06	.00	-.11**
Irritation	-.14**	-.04	-.08**	.11**	.04	.06*	-.12**	-.00
Shame	.05	-.05	.01	.00	.02	-.05	.10**	.00
Contempt	.07*	-.21**	.07*	.01	.02	-.01	.07*	-.04
Guilt	.04	.02	-.05	.03	-.00	-.06*	.04	-.07*
Anxiety	-.26**	.12**	.01	-.02	.07*	-.04	-.06*	-.13**
Pleasure	-.07*	-.00	.01	.09**	-.07*	.11**	.05	.20**
Pride	.09**	-.04	-.06*	-.05	.03	.07*	-.08*	.15**
Despair	.06*	-.01	-.01	-.10**	.05	-.04	.00	-.21**

* $p < .05$, two-tailed; ** $p < .01$, two-tailed.

Cultural factors. Respondents who live in the French-speaking part of Switzerland are twice as likely to experience stress and anxiety but are much less likely to feel despair than their compatriots in German-speaking Switzerland. It is difficult to interpret this result without further evidence. The higher likelihood of anxiety and stress in French-speaking Switzerland might be due to a somewhat less comfortable economic position in that part of the country, as shown, for example, in a higher unemployment rate.

Respondents who do not have Swiss nationality are twice as likely to experience stress as are Swiss nationals. This could be because immigrants work in more stressful settings, have less social support and have to adjust to an unfamiliar cultural environment.

Emotionality factors. Respondents' ratings concerning the frequency with which they experience certain emotions were interpreted as indicators of *habitual or trait emotionality*. These subjectively experienced frequencies could be linked to personality but could also be the result of long-term socio-economic or other contextual factors. Critics could also argue that these rather general frequency self-reports primarily reflect response tendencies or stereotypes rather than the actual frequency of experiences in the past. Evidently such factors may play a role. However, it is hard to see how one could obtain a reliable measure of an individual's habitual tendency to experience specific emotions in a different way. To begin with, emotional experiences are subjective phenomena, and our only access to them is via self-report. While behavioral observation may provide clues, the relationship between observable behavior and felt experience is not perfect, in large part because of the strong impact of emotion regulation in social situations. Furthermore it is impossible to permanently observe a representative sample of the population over long periods of time in order to determine the frequency of certain types of emotional reactions. Thus we must either abandon the hope of measuring trait emotionality in this context or make do with obviously imperfect measures of self-report. Moreover self-report measures of the frequency of emotional experiences are routinely used by research in personality and trait emotionality. This literature reports interesting relationships between trait emotionality and behavioral indicators, and thus provides evidence that self-reports of habitual emotionality can provide valid and useful information on affective dispositions (see contributions in Matthews, 1997). While the format we used

to collect this dispositional information differs from that of classic psychometric instruments, the pattern of results obtained suggests that we measured similar dimensions.

We decided to use all 14 emotionality variables in our analyses rather than combine them into a smaller number of factors because an examination of the z-transformed variable correlation matrix showed only very few correlations with $r > .2$ and because the correlations reported below show interesting effects for individual categories.

We will first report the correlations between the 14 trait-emotion categories and a number of socio-demographic indicators (see Table 6). These correlations should be useful in discussing the role of trait emotionality risk factors for the occurrence of different emotions. Although the amount of variance explained is relatively low (given the large N), we will briefly summarize the highly significant ($p < .01$) correlations: respondents in the German-speaking part of Switzerland more frequently report happiness, surprise and pride than do respondents in the French-speaking part of the country, who report more frequent anxiety, irritation and disgust. Swiss nationals report more frequent happiness and surprise than non-nationals. Females report more frequent sadness, fear and anxiety, whereas men report more contempt. Older people report more happiness compared with younger people, who experience more frequent anger and irritation. Respondents with higher education report more irritation and pleasure, whereas less well-educated respondents experience more frequent despair. Respondents living with a partner have more frequent experiences of pleasure but also of anger, whereas singles experience more sadness. Respondents with children are more frequently angry and irritated, whereas respondents without children experience sadness and shame more frequently.

Table 4 shows the emotionality traits that significantly increase the risk of experiencing certain emotions. The results indicate that the more frequently respondents *habitually* experience a particular kind of emotion (trait emotionality), the more likely they will have experienced an exemplar of that emotion category *yesterday*. Thus respondents high on trait anxiety are almost three times as likely to have experienced anxiety yesterday compared to those who are low on this trait. In the case of trait sadness and trait despair, the likelihood is about two times higher. Respondents high on trait irritation are about 1.5 times more likely to have experienced

anger yesterday. Similarly respondents reporting frequent habitual pleasure, surprise or pride experiences are also 1.5 times more likely to have experienced joy or happiness. Because some emotions occur less frequently than expected for respondents with certain habitual emotion dispositions, some types of trait emotionality might inoculate, or shield, against particular emotions. Our results seem to indicate that trait pleasure may reduce the risk of despair and that trait surprise may reduce the risk of anxiety.

Taken together these results seem to strongly confirm the notion of habitual or trait emotionality, that is, an individual difference variable consisting of a disposition to experience certain types of emotions more frequently than other people. While this notion is widely accepted for trait anxiety and trait anger (Spielberger et al., 1999), other types of trait emotionality have rarely been investigated. However, before discussing the implications of this notion in greater detail, we will discuss whether these results may have been influenced by priming effects or whether they are simply due to methodological artifacts, such as common method variance or demand characteristics.

There is commonality in methods because both the reported emotion experience (as it occurred *yesterday*) and the habitual frequency ratings for the 14 emotion categories were reported on the same questionnaire. However, whereas the frequency of the habitual experiences was judged on a 4-point ordinal scale, the report of the actual emotion experience on the previous day (and the verbal description given to it) was based on open responses (and coded by a computer-based algorithm). Thus it is unlikely that common method variance is responsible for the findings. The other possibility is that the habitual emotion categories may have primed certain responses. However, the habitual emotion ratings scales followed the open emotion response on the questionnaire. Of course, respondents may have read the entire questionnaire before answering. Nevertheless it is difficult to see how specific priming could have taken place on the basis of reading once through a list of 14 emotion categories. Rather one might also assume an artifact in the opposite direction: after respondents spontaneously reported a particular emotion they experienced yesterday, they might report experiencing this type of emotion more frequently than others. However, it is hard to see why demand characteristics or evaluation apprehension should have this effect because there was no need to justify the reported emotion. Most important, respondents gave a wide variety

TABLE 7
Correlations between 14 emotionality traits and 6 Prime-MD dimensions

Emotionality traits	General health perception	Somatic disorders	Eating disorders	Depressive disorders	Anxiety disorders	Alcohol disorders
Sadness	-.16**	.24**	.12**	.28**	.28**	-.01
Happiness	.19**	-.33**	-.22**	-.41**	-.42**	-.15**
Anger	.02	.07*	.11**	.05	.09**	.04
Disgust	.00	.04	.04	.05	.01	.05
Surprise	.16**	-.26**	-.15**	-.32**	-.33**	-.10**
Fear	-.18**	.22**	.02	.15**	.23**	.03
Irritation	-.05	.13**	.09**	.13**	.17**	.08**
Shame	.05	-.07*	.04	-.02	-.06	.06*
Contempt	-.04	-.03	.01	.02	-.06	.09**
Guilt	-.05	.07*	.07*	.15**	.08**	.05
Anxiety	-.23**	.28**	.10**	.23**	.36**	-.01
Pleasure	.27**	-.38**	-.17**	-.37**	-.39**	-.06
Pride	.19**	-.20**	-.10**	-.24**	-.25**	-.04
Despair	-.18**	.24**	.05	.37**	.29**	.01

* $p < .05$ level, two-tailed; ** $p < .01$ level, two-tailed.

of verbal labels for the open responses, and these only rarely corresponded verbatim to the category labels provided for the frequency-rating question.

As to the danger of priming, it has already been pointed out in the discussion of the frequency data above that the choice of emotions was highly constrained for the respondents. If they followed the instructions and searched their memory for an emotional situation they experienced *yesterday*, it is unlikely that availability heuristics played a major role. In consequence it does not seem unreasonable to explain our findings using a trait-emotionality approach, such as the proneness to experience anxiety, sadness, despair, irritation, pleasure, surprise or pride (to name only the emotions for which we found a significant tendency to affect current experience). The potential mechanisms underlying such effects, such as appraisal biases, will be explored in the General discussion section below.

Subjective health factors. As shown in Table 4 and in line with expectations, respondents reporting symptoms for eating disorders, depression and anxiety, respectively, are about two times more likely than others to have experienced anxiety yesterday. Furthermore those reporting somatic and depression symptoms seem to be only half as likely to experience happiness as others. Because one could expect respondents who report frequent anxiety or despair experiences to report more symptoms related to these emotional states, we examined how these results are related to emotionality differences. Table 7 shows the correlations between the original, continuous scales for both the habitual emotion ratings and the Prime-MD dimensions. The pattern of correlation shows that respondents reporting many symptoms for anxiety, depression, somatization and eating disorders tend to report more frequent experiences of despair, anxiety, sadness and fear, and less frequent experiences of happiness, pleasure, surprise and pride. The correlation matrix also seems to show an undifferentiated picture, with proneness to experience negative emotions in general linked to reporting psychosomatic symptoms. This may suggest the presence of emotional disorders or of a general negativity bias (Watson and Pennebaker, 1989). However, the results from a joint factor analysis (using the scree test to determine the number of factors to extract and oblimin rotation) of the 6 Prime-MD dimensions and the 14 habitual emotions (shown in Table 8) indicate a more differentiated pattern. All Prime-MD dimensions, except alcohol disorders, load on the first

TABLE 8
Factor structure of 14 emotionality traits and 6 Prime-MD dimensions

	Component					
	1	2	3	4	5	6
Despair	.71					
Depressive disorders	.70					
Somatic disorders	.67					
Anxiety disorders	.62					
General health perception	-.52					
Eating disorders	.40					
Anxiety		-.74				
Fear		-.73				
Anger			-.77			
Irritation			-.70			
Happiness			.45			
Disgust				.81		
Guilt				-.73		
Pride					.69	
Shame					-.50	
Surprise					.46	
Pleasure					.44	
Alcohol disorders						.65
Sadness					-.46	-.51
Contempt		.45				.49

Note: Principal component analysis. Oblimin rotation with Kaiser normalization.

factor. Despair is the only emotionality variable that loads highly on this factor, perhaps suggesting that frequent experience of this emotion is linked to emotional disorders. The remaining factors show plausible combinations of individual emotions: fear and anxiety, anger and irritation, and a positive cluster of pleasure, pride and surprise. Happiness is negatively loaded on the anger factor. The other factors are more difficult to interpret.

One clear pattern of findings concerning emotionality and health symptoms emerges: the likelihood of experiencing anxiety on a given day is higher for individuals frequently experiencing anxiety or reporting symptoms indicative of anxiety or depression. This finding seems to confirm the persistence of anxiety disorders and may explain the vicious circle of anxiety experiences increasing the risk of future incidence.

As to potential biases, we cannot exclude that filling out the symptom questionnaire has primed the memory for a particular emotion to report. However, as pointed out before, constraining the reporting period to the previous day makes this explanation rather implausible.

As shown by Watson and Pennebaker (1989), we must be careful not to interpret the symptom reports as indicative of actual health status. As they suggest, much of the variance in these symptom reports may be explained by negative affectivity. However, our data on the relationship between symptom reports and emotion dispositions suggest a more differentiated picture. More work is needed to determine the degree of overlap and to examine the role of individual differences.

Situational factors. As mentioned above, the situational risk factors in Table 5 will be discussed using the absolute size of the adjusted residuals. We included four main situational factors: home, work/school, a public place and other. Happiness, fear, sadness and anger are expected to be part of organizational life (Ashforth and Humphrey, 1995). Yet our respondents reported primarily anger and stress in the work setting, and were less likely to experience happiness or sadness at work than in other settings. The risk of experiencing anxiety increases slightly at home, perhaps because one is more likely to engage in rumination (concerning the events of the day or in anticipation of future events).

Interaction of risk factors. Although interactions of these risk factors should notably increase the possibility to predict which emotions will occur under which conditions, the low number of respondents in the cells in the contingency tables (despite the large overall N) did not allow for valid statistical analyses.

Antecedent and reaction profiles

Results

In this section, we examine the antecedents and reactions of respondents' emotional experiences. Given the limitations of the questionnaire format (two pages) and the difficulty of explaining the nature of appraisal dimensions to naive participants, we asked only one

TABLE 9
Causal attribution profiles for the six most frequent emotions

Cause		Emotion categories						Total
		Anger family	Happiness family	Anxiety	Sadness	Stress	Despair	
Self	%	11.88	29.48	29.85	29.09	3.43	16.28	23.35
	AR	−4.08	2.31	1.34	1.06	1.19	−1.14	
Someone close	%	24.38	35.84	34.33	34.55	19.57	23.26	29.78
	AR	−1.78	2.11	0.87	0.82	−1.58	−0.97	
Colleague	%	11.25	1.98	2.99	9.09	13.04	4.65	9.56
	AR	0.87	0.77	−1.95	−0.12	0.84	−1.14	
Superior/boss	%	12.50	4.05	8.96	1.82	8.70	4.65	7.35
	AR	2.97	−2.02	0.54	−1.66	0.36	−0.71	
A stranger	%	23.75	8.67	4.48	1.82	13.04	3.23	13.97
	AR	4.25	−2.43	−2.39	−2.74	−0.19	3.21	
No-one specific	%	16.25	1.98	19.40	23.64	15.22	2.93	15.99
	AR	0.11	−2.18	0.81	1.63	−0.15	0.92	

Note: AR = adjusted residual.

emotion antecedent appraisal question: the causal agent perceived as responsible for the event. The data are shown in Table 9.

Table 10 shows the profiles for the subjectively experienced intensity and duration, and the type of physiological symptoms and expressive behaviors that were reported. Table 11 shows the responses for emotion control and the type of communication – verbal utterances during the event and emotion sharing after the event – that may have occurred.

As suggested in the Introduction, we also wished to examine how the general antecedents and reaction profiles might be modified by the measured risk factors. A complete analysis of profile differences due to risk factors would require three-way contingency tables. Given the low frequency with which some emotions are observed, this analysis is not viable for all six emotions. We therefore concentrated on the two major emotion classes, the happiness family and the anger family, and analyzed the interaction between risk factors and antecedent/reaction profiles separately for each family. Table 12 shows the significant results (overall chi-square) for happiness and Table 13 shows those for anger.

Discussion

Antecedents. There are two major findings for the causal attribution variable. First, anger-producing events are most often assumed to be caused by a superior, for example one's boss, or by a stranger, and rarely attributed to oneself. This finding fits well with the greater likelihood of anger occurring in the workplace. Thus Fitness (2000) found that anger in the workplace, especially anger due to injustice, is often directed at the boss. Second, happiness is more frequently assumed to be caused by oneself or by someone close, such as a partner, friend or family member. Bosses and strangers are rarely cited for making one happy. These results confirm a similar difference between external attribution for anger and internal attribution for happiness in the large intercultural ISEAR study cited earlier (Scherer, 1997). Surprisingly events provoking despair are more frequently assumed to be caused by strangers than by known individuals, whereas strangers are rarely held responsible for the causation of events producing anxiety or sadness.

TABLE 10
Reaction profiles for the six most frequent emotions

		Emotion categories						
		Anger family	Happiness family	Anxiety	Sadness	Stress	Despair	Total
Length								
A few seconds	%	13.92	6.36	3.03	5.56	6.67	4.65	7.98
	AR	3.28	−0.95	−1.58	−0.69	−0.34	−0.84	
A few minutes	%	43.04	27.75	25.76	25.93	31.11	25.58	31.91
	AR	3.57	−1.43	−1.14	−0.99	−0.12	−0.93	
An hour	%	22.15	23.12	21.21	25.93	33.33	27.91	24.12
	AR	−0.69	−0.37	−0.59	0.33	1.51	0.61	
Longer	%	2.89	42.77	5.00	42.59	28.89	41.86	35.99
	AR	−4.71	2.26	2.53	1.07	−1.04	0.84	
Intensity								
Weak	%	8.97	1.16	9.09	3.85	6.67	4.88	5.44
	AR	2.31	−3.02	1.40	−0.53	0.38	−0.17	
Medium	%	33.33	19.65	28.79	21.15	51.11	21.95	27.77
	AR	1.85	−2.90	0.20	−1.12	3.65	−0.87	
Strong	%	46.15	59.54	5.00	5.00	4.00	56.10	51.59
	AR	−1.62	2.54	−0.28	−0.24	−1.63	0.60	
Very strong	%	11.54	19.65	12.12	25.00	2.22	17.07	15.20
	AR	−1.51	1.99	−0.74	2.07	−2.53	0.35	

Symptoms								
Heart racing	%	7.55	11.11	7.46	1.91	13.33	16.28	10.19
	AR	-1.31	0.48	-0.79	0.19	0.73	1.38	
Perspiring, sweaty hands	%	3.14	2.34	19.40	1.82	8.89	4.65	5.37
	AR	-1.48	-2.13	5.44	-1.23	1.09	-0.22	
Tense, strained	%	38.99	1.17	38.81	21.82	44.44	27.91	24.81
	AR	4.93	-8.66	2.83	-0.54	3.18	0.49	
Other symptoms	%	37.11	68.42	26.87	5.91	24.44	46.51	46.85
	AR	-2.93	6.84	-3.50	0.64	-3.15	-0.05	
No symptoms	%	13.21	16.96	7.46	14.55	8.89	4.65	12.78
	AR	0.19	1.98	-1.39	0.41	-0.82	-1.66	
Expression								
Laughter, smiles	%	8.28	68.39	7.69	9.09	4.44	13.95	27.83
	AR	-6.49	14.51	-3.86	-3.27	-3.66	-2.12	
Crying, sobbing	%	2.55	2.30	9.23	21.82	2.22	9.30	5.75
	AR	-2.05	-2.38	1.28	5.40	-1.06	1.04	
Other reactions	%	77.07	25.29	73.85	58.18	86.67	65.12	57.88
	AR	5.78	-1.58	2.78	0.05	4.08	1.00	
No reaction	%	12.10	4.02	9.23	1.91	6.67	11.63	8.53
	AR	1.90	-2.59	0.21	0.67	-0.47	0.76	

Note: AR = adjusted residual.

TABLE 11
Control and sharing behavior profiles for the six most frequent emotions

Communication behavior		Emotion categories						Total
		Anger family	Happiness family	Anxiety	Sadness	Stress	Despair	
Control								
No	%	3.13	84.66	12.70	29.41	9.09	26.83	43.05
	AR	−3.90	12.96	−5.19	−2.07	−4.76	−2.19	
Yes, tried not to show it	%	17.31	12.27	28.57	31.37	18.18	34.15	19.88
	AR	−0.96	−2.94	1.84	2.16	−0.30	2.38	
Yes, tried to calm down	%	52.56	3.07	58.73	39.22	72.73	39.02	37.07
	AR	4.79	−1.86	3.80	0.33	5.12	0.27	
Speak								
Did not speak	%	23.08	25.90	4.63	4.38	26.19	42.86	29.69
	AR	−2.16	−1.29	2.04	1.78	−0.52	1.95	
A short phrase	%	35.90	42.17	23.44	26.92	5.00	21.43	35.44
	AR	0.14	2.19	−2.14	−1.35	2.06	−1.98	
A long statement	%	41.03	31.93	35.94	32.69	23.81	35.71	34.87
	AR	1.93	−0.96	0.19	−0.35	−1.57	0.12	

Share								
Partner	%	31.06	31.03	23.88	18.18	28.26	44.19	29.67
	AR	0.46	0.48	-1.11	-1.97	-0.22	2.17	
Family member	%	14.29	17.82	14.93	16.36	13.04	16.28	15.75
	AR	-0.61	0.91	-0.20	0.13	-0.53	0.10	
Friend	%	8.70	14.94	22.39	21.82	4.35	11.63	13.55
	AR	-2.14	0.65	2.26	1.89	-1.91	-0.38	
Colleague	%	24.84	12.07	7.46	9.09	17.39	11.63	15.38
	AR	3.96	-1.47	-1.92	-1.36	0.39	-0.71	
Stranger	%	4.35	4.02	5.97	3.64	4.35	2.33	4.21
	AR	0.10	-0.15	0.76	-0.22	0.05	-0.64	
Nobody	%	16.77	2.11	25.37	3.91	32.61	13.95	21.43
	AR	-1.72	-0.51	0.84	1.81	1.93	-1.24	

Note: AR = adjusted residual.

TABLE 12
Risk factors for reaction profiles – happiness family

		Demographic variable			Chi-square
Emotion intensity		Male	Female	Total	
Weak	%	0.00	2.19	1.17	$\Phi^2(3, 170) = 9.47^*$
	AR	−1.32	1.32		
Medium	%	21.51	17.58	19.41	
	AR	0.64	−0.64		
Strong	%	68.35	53.84	60.58	
	AR	1.93	−1.93		
Very strong	%	10.12	26.37	18.82	$\Phi^2(3, 163) = 8.53^*$
	AR	−2.70	2.70		
How long was the emotion?		Age 40 and under	Over age 40	Total	
A few seconds	%	11.26	2.17	6.13	
	AR	2.39	−2.39		
A few minutes	%	29.57	27.17	28.22	
	AR	0.33	−0.33		$\Phi^2(5, 171) = 22.62^{***}$
An hour	%	26.76	21.73	23.92	
	AR	0.74	−0.74		
Longer	%	32.39	48.91	41.71	
	AR	−2.12	2.12		
Emotion expression		Male	Female	Total	
Laughter, smiles	%	57.50	76.92	67.83	
	AR	−2.71	2.71		

Crying, sobbing	%	0.00	4.39	2.33	$\Phi^2(5, 171) = 15.55^{**}$
	AR	-1.89	1.89		
Screaming, shouting, yelling	%	0.0	3.29	1.75	
	AR	-1.63	1.63		
Abrupt movements	%	3.75	1.09	2.33	
	AR	1.14	-1.14		
Other reactions	%	30.00	14.28	21.63	
	AR	2.49	-2.49		
No reaction	%	8.75	0.00	4.09	
	AR	2.88	-2.88		
With whom did you share emotion?		Male	Female	Total	$\Phi^2(5, 171) = 15.55^{**}$
Partner	%	36.25	26.37	30.99	
	AR	1.39	-1.39		
Family member	%	22.50	13.18	17.54	
	AR	1.59	-1.59		
Friend	%	7.50	20.87	14.62	
	AR	-2.47	2.47		
Colleague/classmate	%	16.25	8.79	12.28	
	AR	1.48	-1.48		
Stranger	%	5.00	3.29	4.09	
	AR	0.56	-0.56		$\Phi^2(5, 171) = 29.98^{***}$
Nobody	%	12.50	27.47	20.47	
	AR	-2.42	2.42		
With whom did you share emotion?		Married	Not married	Total	
Partner	%	44.11	11.59	30.99	
	AR	4.51	-4.51		

TABLE 12 (continued)

Demographic variable					Chi-square
Family member	%	20.58	13.04	17.54	$\Phi^2(5, 157) = 37.09^{***}$
	AR	1.27	-1.27		
Friend	%	7.84	24.63	14.62	
	AR	-3.04	3.04		
Colleague/classmate	%	7.84	18.84	12.28	
	AR	-2.14	2.15		
Stranger	%	2.94	5.79	4.09	
	AR	-0.92	0.92		
Nobody	%	16.66	26.08	20.46	
	AR	-1.49	1.49		
With whom did you share emotion?		Live alone	Live with partner	Total	
Partner	%	2.27	45.13	33.12	
	AR	-5.12	5.12		
Family member	%	13.63	17.69	16.56	
	AR	-0.61	0.61		
Friend	%	31.81	7.96	14.64	
	AR	3.79	-3.79		
Colleague/classmate	%	13.63	8.84	10.19	
	AR	0.89	-0.89		
Stranger	%	9.09	1.76	3.82	
	AR	2.14	-2.14		
Nobody	%	29.54	18.58	21.65	
	AR	1.49	-1.49		

Note: AR = adjusted residual.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Reactions. Anger experiences often do not last longer than a few minutes and tend to be of weak or medium intensity. In contrast happiness experiences tend to exceed an hour and are often quite strong. Sadness is also characterized by strong intensity. Again these results confirm the earlier findings in the ISEAR study (Scherer and Wallbott, 1994: 320), except that in that study sadness was also characterized by long duration. It is possible that this difference is due to our asking for events that happened yesterday, which limits the duration to at most a day. In the ISEAR studies, many respondents reported a duration of weeks or months for sadness. In general it seems possible that the emotion events reported in the ISEAR study were more intense (which is probably the precondition for being stored in memory and recalled as a recent exemplar) and relatively longer than experiences that happened yesterday (as confirmed by a comparison of Table 7 there and Table 10 in this article).

With respect to physiological reactions, we predictably find that anger, anxiety and stress produce symptoms of tenseness and strain, probably due to an elevated level of muscle tension. Perspiration and sweaty hands strongly characterize anxiety experiences. The capacity for interoception of physiological reactions is often debated. Many reviews of the literature suggest that there is little correspondence between measured and reported physiological parameters (Philippot, 1991; Vaitl, 1996). The convergence of symptom descriptions for specific emotions is often explained by the assumption that respondents report not actual symptoms but rather cultural stereotypes about the symptoms expected for specific emotions. Such an explanation cannot be ruled out in the present case. On the other hand, we can safely assume that many of the emotions reported in the current study were much more intense than those that psychologists tend to induce in the laboratory. Consequently we can also expect that the physiological reactions were much stronger and potentially more noticeable for individuals. In the current study, perceived intensity of emotion correlates significantly ($r = .22, p < .001$) with the total number of bodily symptoms reported. It seems advisable to suspend judgment about the human capacity to note and veridically report on internal processes such as physiological symptoms until appropriate studies involving strong emotions are available.

The use of questionnaires is not the ideal means for obtaining detailed information on expressive behavior, which is often subtle, complex and changeable. Much of it may also not be accessible to

TABLE 13
Risk factors for reaction profiles – anger family

		Demographic variable			Chi-square
Who caused the emotion?		Male	Female	Total	
Self	%	9.76	14.29	11.95	$\Phi^2(5, 159) = 11.32^*$
	AR	−0.88	0.88		
Someone close	%	15.85	33.77	24.53	
	AR	−2.62	2.62		
Colleague/classmate	%	12.20	10.39	11.32	
	AR	0.36	−0.36		
Superior/boss	%	13.41	11.69	12.58	
	AR	0.33	−0.33		
A stranger	%	31.71	14.29	23.27	
	AR	2.60	−2.60		
Emotion intensity		Age 40 and under	Over age 40	Total	
Weak	%	7.41	8.70	8.22	$\Phi^2(3, 146) = 8.22^*$
	AR	−0.27	0.27		
Medium	%	18.52	40.22	32.19	
	AR	−2.71	2.71		
Strong	%	57.41	41.30	47.26	
	AR	1.88	−1.88		
Very strong	%	16.67	9.78	12.33	
	AR	1.22	−1.22		

Emotion expression		Age 40 and under	Over age 40	Total	
Laughter, smiles	%	7.27	10.00	8.97	$\Phi^2(5, 145) = 13.56^*$
	AR	-0.56	0.56		
Crying, sobbing	%	7.27	0.00	2.76	
	AR	2.59	-2.59		
Screaming, shouting, yelling	%	10.91	11.11	11.03	
	AR	-0.04	0.04		
Abrupt movements	%	18.18	5.56	10.34	
	AR	2.42	-2.42		
Other reactions	%	47.27	61.11	55.86	
	AR	-1.63	1.63		
No reaction	%	9.09	12.22	11.03	
	AR	-0.58	0.58		
With whom did you share the emotion?		Married	Not married	Total	
Partner	%	39.81	13.21	30.77	$\Phi^2(5, 156) = 22.61^{***}$
	AR	3.41	-3.41		
Family member	%	16.50	11.32	14.74	
	AR	0.86	-0.86		
Friend	%	2.91	20.75	8.97	
	AR	-3.69	3.69		
Colleague/classmate	%	22.33	30.19	25.00	
	AR	-1.07	1.07		
Stranger	%	3.88	5.66	4.49	
	AR	-0.51	0.51		
Nobody	%	14.56	18.87	16.03	
	AR	-0.69	0.69		

TABLE 13 (continued)

Demographic variable				Chi-square
With whom did you share the emotion?		Live alone	Live with partner	Total
Partner	%	6.90	38.33	32.21
	AR	−3.25	3.25	
Family member	%	17.24	13.33	14.09
	AR	0.54	−0.54	
Friend	%	27.59	5.00	9.40
	AR	3.74	−3.74	
Colleague/classmate	%	24.14	25.83	25.50
	AR	−0.19	0.19	
Stranger	%	6.90	3.33	4.03
	AR	0.88	−0.88	
Nobody	%	17.24	14.17	14.77
	AR	0.42	−0.42	

Note: AR = adjusted residual.

* $p < .05$; ** $p < .01$; *** $p < .001$.

consciousness. Our data show, as expected, that people tend to laugh or smile in joy or happiness and to weep or sob in sadness. In anger and stress, other types of reactions increase (a combined category based on answers about “abrupt movement” and “other reactions”). Not surprisingly this result also confirms findings by Scherer and Wallbott (1994; see Table 10, 323, for more detailed expressive behavior profiles for different emotions).

How do the measured risk factors affect these profiles? We will first discuss the happiness family, shown in Table 12. For intensity we find a strong gender difference: women report “very strong” happiness more often than men. For duration we find an effect of age: respondents over 40 years of age report fewer very short (a few seconds) and more long (longer than an hour) happiness experiences than do respondents of 40 and under. Unfortunately our data do not allow determining whether this finding stems from a difference in general reactivity or is due to qualitatively different events. For expressive behavior our findings confirm popular stereotypes: women report smiling and laughing, and to some extent also crying and sobbing, more frequently than do men, who tend to report “other varied symptoms” more frequently. As to the sharing happiness experiences, we find a number of intriguing differences. Women tend to share happiness more often with friends (or not share at all) than do men, who tend to rely more on partners and family members to share this emotion. As for the overall incidence of certain emotions, we find that being married or living with a partner (as we saw earlier, there is a lot of overlap) makes a difference. Predictably, married respondents and those living with a partner tend to share more frequently with that partner, whereas unmarried respondents and those living alone share more frequently with friends, colleagues or even strangers.

We now turn to the anger family, shown in Table 13. For causal attribution the adjusted residuals suggest that men tend to attribute the responsibility for an anger-producing event more frequently to a stranger than do women, who tend to attribute this responsibility more often to someone close. This finding does not seem to be linked to the issue of work versus home settings because there are no differences in causal attribution to colleagues or superiors. For anger intensity we find an age effect: compared with respondents of 40 and under, those over 40 tend to report medium anger intensity more frequently than strong or very strong anger. One might assume that this finding is a first sign of flattening of affect with age.

However, this assumption is contradicted not only by much of the literature (Carstensen et al., 2003) but also by the longer duration for happiness reported earlier. More likely the effect might be due to older individuals having more realistic expectations, recognizing the frailties of mankind and developing wisdom (Baltes and Carstensen, 2003). This interpretation is also supported by a significant finding for expressive behavior: respondents of 40 and under show more signs of being affected by anger, especially with respect to crying or sobbing and making abrupt movements, than do those over 40. For sharing we find a pattern similar to that in happiness: married respondents or those who are living together share with their partner, whereas unmarried respondents, especially when living alone, tend to share anger with a friend (but not, as in happiness, with a colleague or a stranger). It seems that, although happiness is shared widely, one needs a person who is close to talk to about anger.

Relation of emotion experiences to life satisfaction

Results and discussion

It is often assumed that subjective well-being and general life satisfaction are based primarily on the relative predominance of positive over negative emotional experiences in the life course of a person (Diener et al., 2003). Indeed, as shown in Table 6, there are positive correlations between general life satisfaction and trait happiness, surprise, pleasure and pride, as well as negative correlations with trait sadness, disgust, fear, anxiety and despair. However, there is no relationship with other negative emotions, in particular anger and irritation. In fact, as shown in Table 14, there is an intriguing relationship for irritation, suggesting that respondents who are frequently irritated are on the whole rather satisfied with their lives. This finding may reflect the nature of anger and irritation as status emotions (Tiedens, 2001), often felt in response to other people not behaving as they “ought” to. Tavris (1989) suggested that anger is the “policeman” of social rules and norms. Therefore persons who are often irritated may feel that they have the right and the power to judge others’ behavior, and this self-confidence and self-assurance may be related to subjective well-being. In consequence linking high life satisfaction with frequent positive emotion experiences in

TABLE 14
Cross-tabulation of life satisfaction with trait irritation

General life satisfaction		Median split z score irritation		Total
		Low	High	
Unsatisfied	<i>N</i>	81	57	138
	%	58.7	41.3	100.0
	AR	2.1	-2.1	
Neither unsatisfied nor satisfied	<i>N</i>	29	36	65
	%	44.6	55.4	100.0
	AR	-1.0	1.0	
Rather satisfied	<i>N</i>	226	291	517
	%	43.7	56.3	100.0
	AR	-4.2	4.2	
Very satisfied	<i>N</i>	221	164	385
	%	57.4	42.6	100.0
	AR	3.4	-3.4	
Total	<i>N</i>	557	548	1105
	%	50.4	49.6	100.0

Note: AR = adjusted residual.

the past or low life satisfaction with frequent negative experiences may not be the most appropriate model for understanding the relationship between emotional experiences and subjective well-being.

What is the relationship between general life satisfaction and the emotion experienced yesterday? The data are shown in Table 15. Respondents who are generally very satisfied with their lives experience emotions from the happiness family with a significantly higher probability. This is similar to the results for positive trait emotionality, which indicated that a high frequency of pleasure experiences (but not necessarily happiness) was a risk factor for having had a happy or joyful experience yesterday. We will discuss the potential mechanism for these findings in the general discussion.

Respondents who experienced an anger/irritation/frustration experience yesterday are more likely to be rather satisfied with their lives, whereas those who experienced anxiety are more likely to be in the "neither unsatisfied nor satisfied" category. These results indicate that generally equating high satisfaction and well-being with positive emotions, and low satisfaction and well-being with

TABLE 15
Life satisfaction and occurrence of the six most frequent emotions

General life satisfaction		Emotions						Total	Chi-square
		Anger family	Happiness family	Anxiety	Sadness	Stress	Despair		
Unsatisfied	%	8.4	6.9	12.1	13.5	13.3	19.0	10.2	$\Phi^2(15, 518) = 50.46^{***}$
	AR	-0.9	-1.7	0.5	0.8	0.7	2.0		
Neither unsatisfied nor satisfied	%	3.9	1.3	18.2	9.6	2.2	4.8	5.4	
	AR	-1.0	-2.8	4.9	1.4	-1.0	-0.2		
Rather satisfied	%	58.4	46.5	43.9	50.0	42.2	54.8	50.4	
	AR	2.4	-1.2	-1.1	-0.1	-1.1	0.6		
Very satisfied	%	29.2	45.3	25.8	26.9	42.2	21.4	34.0	
	AR	-1.5	3.6	-1.5	-1.1	1.2	-1.8		

Note: AR = adjusted residual.

* $p < .05$; ** $p < .01$; *** $p < .001$.

negative emotions may be too simple a model. The relationship between emotional experience and subjective well-being or life satisfaction could therefore benefit from a more discriminative examination. The differentiated pattern of findings for anger also suggests that it is unlikely that the results are due to artifacts such as priming.

General discussion

Limitations of the current study

Before evaluating the contribution of the study as a whole, we will discuss some of its limitations. Although we tried to get as close as possible to a representative sample of the German- and French-speaking parts of the Swiss population, we cannot claim to have studied a truly random or stratified sample. In particular there were the constraints of conducting a postal survey based on telephone-directory addresses. Although the density of telephone connections in Switzerland is high, and almost all households are equipped, we do not know if the randomly chosen respondent type (sex, age group) within the household was in fact the person who responded to and returned the questionnaire. However, given the fairly balanced characteristics of our sample with respect to socio-demographic background factors (see Table 1), this process seems to have worked reasonably well.¹⁰

The fairly low response rate might be regarded as another limitation, especially with respect to the representativeness of the sample. Again the fact that the socio-demographic characteristics of the sample approach those of the Swiss population suggests that the problem is not too serious. As argued above, the special nature of our questionnaire, inviting respondents to report an emotion experienced on the previous day, may explain a sizeable part of the non-responses, i.e. all those respondents who thought that they had not experienced any emotion worth mentioning. As described in the Results section, this portion of the non-responses can be meaningfully interpreted. If one allows for this specific factor causing non-response, the rate of questionnaire return seems quite in line with mail surveys of the general population asking them to report on sensitive topics (Chiu and Brennan, 1990). In fact Krysan et al. (1994) showed that, for white respondents, there was very little

difference in response rate for a mail survey and face-to-face interviewing on racial attitudes. We assume that many of our respondents would not have disclosed some of the very intimate emotional experiences they reported anonymously on the questionnaire to an interviewer in a face-to-face interaction. As documented in the Introduction, anonymous mail surveys are much less likely to suffer from acquiescence and social desirability biases than face-to-face or telephone interviews. Thus, while a low response rate is obviously a limitation, it seems impossible to obtain better data from a larger percentage of respondents from the general population by any other means.

The potential operation of self-selection and response biases constitutes another possible limitation. It is therefore sometimes suggested that individuals who respond in mass surveys have more helpful and altruistic personality dispositions (and might thus report more positive and optimistic emotion). However, Strand (1997) did not find any empirical evidence for this hypothesis. Even if there were such a positivity bias in our data, it would probably be balanced by a tendency of hypochondriacally minded individuals to respond to the health questions and show a general negativity bias. Thus self-selection and response biases are unlikely to present serious limitations, especially as they can hardly be avoided in other forms of data collection (which often show more serious and empirically documented biases such as acquiescence and social desirability; see above).

Another limitation is that, for practical reasons and to ensure a reasonable return rate, the questionnaire had to be very brief (in this case, two pages). Fortunately this constraint seemed to limit only the number and complexity of the issues that could be explored; judging from the small number of missing or nonsensical responses, it did not affect the quality of the responses that could be obtained with this format. In consequence, although we cannot report exact confidence limits as in a truly representative survey based on random selection, we feel that the results obtained can be reasonably generalized beyond the specific sample of respondents and interpreted in terms of both the relative risk of experiencing a specific emotion (given that one experiences an emotion on a certain day) and the nature and quality of that affective experience.

Based on Robinson and Clore's (2002) incisive analysis of belief and feeling components in emotional self-report, critics might argue that we measured mainly beliefs or stereotypes about emo-

tions since our data are based on retrospective rather than on-line report. We do not agree. To begin with, it seems to us logically impossible to obtain on-line reports of ongoing emotional experience that do not massively change the emotional experience, just as thinking-aloud instructions change the ongoing cognitive processes. In addition it is impossible to obtain on-line reports of powerful real-life emotional experiences like the ones recorded in this study (if only for ethical reasons). In consequence on-line reports during affective episodes are unlikely to faithfully reflect the nature of the flow of the emotional experience. In Robinson and Clore's list of different types of emotional "knowledge", episodic memory follows "experiential knowledge" (during ongoing emotions) with respect to immediacy, before situation-specific and identity-specific beliefs. We hold that, by focusing on the emotions experienced yesterday, we have a good chance of capturing relatively fresh episodic memory before it is molded by belief systems (except for the shaping due to cultural, linguistic and idiosyncratic factors that invariably occurs in the very act of verbalization). In consequence, given that self-report of recent episodic memory is the best we can possibly get, this is a limitation that we need to live with in emotion research.

Alternative approaches

How does the method used to sample emotional episodes differ from the procedure used in experience-sampling research that has become an important methodological option in social psychological research (Bolger et al., 2003; Reis and Gable, 2000)? Most importantly our method uses event sampling, whereas experience-sampling research generally uses time sampling (Lonner and Berry, 1986). In event sampling one asks a large number of participants to report and describe an event that most stood out in their memory as a significant emotional experience (in our case limited to the preceding day in order to minimize recall bias effects). In experience sampling one asks a generally rather small panel of participants to report what they are feeling at predetermined instances of time over a period of days or weeks. This has important consequences for the type of data that are collected and the inferences that can be drawn from them. Event sampling produces reports of relatively rare but rather powerful emotional experiences. As we have argued above, this approach allows generating some hypotheses as to the

nature and frequency of relatively intense emotional experiences and the type of events that tend to elicit them. Time sampling produces reports of feeling states that are generally of low emotional intensity and may not have any direct ties to eliciting events. This method allows generating hypotheses about the relative frequency of experiences of different affective tonality and intensity over the day and over longer periods of time. It is particularly useful for understanding the effects of social contexts and individual differences on the likelihood of experiencing specific affects or moods over time.

The generalizability of the results, or their representativeness, is limited in both cases by the nature of the sample of participants and potential methodological biases. As discussed above, event sampling by retrospective verbal report (generally anonymous and non-remunerated) may be biased by non-response or by recall factors. In contrast experience sampling may be affected by artifacts such as over-reporting (feeling obliged to report something significant, by inventing something or asking a friend), under-reporting (since identities are generally known, there may be censoring in the interest of self-presentation) or non-response as in the case of drop-outs. In both cases the representativeness of the results depends on the nature of the participants sampled – e.g. if only students are used, it is difficult to generalize beyond a college population. In consequence neither of these methods is inherently better than the other, it all depends on the research question asked. In fact they complement each other, and both methods should be used to examine the actuarial occurrence of real-life affective states.

Frequency of certain emotions

We found stability in the emotion frequency profiles across four years, even though the second wave closely followed one of the most powerful emotion-eliciting news events ever recorded, the terrorist attack on the US on September 11, 2001. This stability supports our claim that, given a large, quasi-representative sample and focusing on a recent and constrained time period (like “yesterday”), one can make fairly reliable inferences about the probability that specific emotions will occur. The major result is also quite clear and corresponds to earlier findings obtained by Scherer and Tannenbaum (1986) and Scherer and Wallbott (1994) with different

procedures: variants of happiness and anger are by far the most frequent emotions that occur on a given day.

There is a tendency in affect research to combine emotions into families, based upon frequency and dissimilarity of antecedent and reaction profiles. Our results indicate that this approach is suitable only for the happiness and anger families, and thereby challenges the general tendency to map the difference between positive and negative emotions onto a happy–sad continuum. Indeed, given that sadness is a relatively rarely experienced and generally intense emotion, “sad” may not be a label that respondents would spontaneously use to characterize negative affect unless constrained to do so by forced-choice scales. Based on the frequency results as well as profile comparisons, it also seems preferable to keep fear and anxiety, as well as sadness and despair, separate. Of course our results do not rule out that these emotions could also be combined into families based upon other criteria.

Our data show that emotions generally not found on the four to six “basic” emotions list occur quite frequently, while some of the classic “basic” emotions occur very rarely. However, when describing the fundamental structure of the affect system, frequency should not be the only – and probably not a decisive – criterion for deciding which emotions should be included. For example fear (which, as shown by the present results, seems to be different from anxiety) is a phylogenetically continuous emotion, which produces primary adaptive action tendencies in situations of imminent danger to life or health. The fact that it is apparently a relatively rare event, at least in modern western societies, does not detract from its important role in the emotion repertoire of humans and many other species. Yet, if the purpose is to study affective states that can readily be encountered in the field or that can be induced in the laboratory, neither fear nor sadness seems an ideal candidate.

Risk factors for certain emotions

Of the many risk factors examined in this study, the most important is clearly trait emotionality. Respondents who reported experiencing a certain type of emotion more frequently had a significantly higher risk of experiencing an exemplar of that emotion class *yesterday*. As discussed above, it is not very likely that these results are due to artifact or response tendency. Rather the scope and strength of

the findings indicate that individual differences in trait emotionality, or a predisposition to experience certain emotions more frequently than others, deserve further investigation.

Although there is an enormous amount of literature on trait anxiety, and to a lesser extent on trait anger (Spielberger et al., 1999), much of this work is conducted from the vantage point of emotional disorders and clinical intervention. The general issue of individual differences as dispositions to react with particular emotions to events that do not automatically trigger a prototypical emotion has attracted considerably less attention. The same is true for the mechanisms, or etiological factors, that might underlie such dispositions. Already Galen suggested that the kinds of stimuli to which the individual is most exposed will greatly differentiate the four types of humor he postulated: melancholic, phlegmatic, choleric and sanguine (although he saw the origin of the temperaments primarily as an imbalance of different bodily fluids).

Appraisal-theory approaches to emotion would turn the sequence around: individual differences in motivation and cognitive biases might lead to systematic appraisal tendencies that can account for differential dispositions to experience certain emotions more often than others (see review in Van Reekum and Scherer, 1997). Thus stable differences in causal-attribution tendencies (external-internal, Rotter, 1966; attribution style, Seligman, 1998; Weiner, 1990), over- or underestimation of personal coping potential and differences in self-esteem would lead to systematic biases in the evaluation of comparable events and thus to a differential likelihood of experiencing certain emotions. For example a stable tendency to attribute causes to oneself combined with an underestimation of coping potential may well predispose a person to experience anxiety or despair more frequently than other people. On the other hand, a tendency to attribute causes, especially failure, to others (Wranik and Scherer, 2002) or to chance, combined with high hedonic tone and optimism, is likely to predispose a person to experience more pleasure and happiness (see Chang, 2001; Peterson and Bossio, 1991; Scheier and Carver, 1985, 1993).

Of course such habitual dispositions to differentially appraise objects, individuals and events may also underlie individual differences in general positive versus negative affect (Watson and Tellegen, 1985; Watson et al., 1988) or well-being (Kahneman et al., 1999). In order to examine the potential role of appraisal biases as etiological factors in the development of habitual emo-

tional reaction differences, one would need to conduct a series of longitudinal studies in which motivational hierarchies and cognitive processing differences could be used to predict the frequency of specific emotional experiences or the tendency to react with specific affects in ambiguous situations.

Further research may establish the extent to which such proneness to experience certain emotions is directly linked to affective personality traits and clinically relevant dispositions, such as trait anxiety, depressiveness and irritability. Kaiser and Scherer (1998; see also Roseman and Kaiser, 2001) have proposed that dysfunctional appraisal tendencies may indeed contribute to the etiology of affective disturbances, as appraisal biases may lead to highly unrealistic and dysfunctional event evaluation and consequently to emotional reactions considered abnormal by observers. The fact that psychosomatic symptoms generally regarded as clinically relevant constitute important risk factors in a similar fashion as trait emotionality highlights the need to investigate the role of appraisal in emotional disorders in greater detail.

Although appraisal biases are probably an important factor underlying trait emotionality, many other mechanisms are likely to be involved. These might include both psychobiological factors, such as genetic predispositions for temperament, mood and personality (e.g. impulsivity), and social-psychological factors such as self-fulfilling prophecies.

While we have focused on trait emotionality as a risk factor, a number of other factors have also emerged, such as the setting in which the emotion occurs (anger at work) or the living arrangement of the person (anger in relationships). Both of these factors could be interesting topics for further research. Finally, the strong differences between two linguistic and cultural regions in Switzerland suggest that cross-cultural studies of risk factors are likely to yield important results.

Prototypical antecedents and reaction patterns

This next section will discuss the emotion-specific antecedents and reaction profiles. Given the inherent restrictions of the questionnaire method, the data are relatively limited in scope. Yet our results consistently confirm previous findings concerning the relative duration and intensity of emotions, the proclivity to control or share an

emotion, and even some isolated effects for expressions and physiological symptoms. Because our study is based on actual emotion experiences that are fairly representative of everyday affect life, it can also provide an important context for laboratory work. For example, certain demographic and social-context variables seem to increase the probability of attributing causality internally or externally, or of showing certain types of reactions. These and other findings from our study could therefore be used to formulate and test hypotheses concerning risk factors that may mediate the appraisal and reaction profiles for specific emotions.

Although a brief questionnaire is not ideal for examining prototypical appraisal and reaction patterns for specific emotions, emotion theorists are faced with a difficult choice when investigating this issue. Laboratory settings and captive participants (especially college students fulfilling course requirements and therefore exhibiting a high tolerance for frustration) may be ideal for the measurement of physiological reactions, expressive behavior and extensive verbal report information; however, the emotions that can be induced or observed in these settings are often not sufficiently specific or intense to generate clear prototypical reaction patterns. On the other hand, our verbal report data may lack fine resolution and be limited in scope. Yet they have the advantage of having been generated by relatively powerful and intense emotion experiences. Perhaps most important, our results also consistently replicate findings from other studies that were obtained using different research paradigms.

Relationships between emotional experience and life satisfaction

Finally, we examine the relationship of emotion experiences to life satisfaction. Whereas much research links mood and well-being to general life satisfaction, relatively little evidence supports the relationship between life satisfaction and the frequency of experiencing discrete emotions. Although our results confirm obvious expectations – individuals who tend to experience more positive emotions are more satisfied with their lives – there are other interesting, non-trivial findings. In particular our results suggest that anger may play a less negative role than previously believed and invite more extensive theoretical discussion on the relationship between appraisal, emotional experience, and general well-being and life

satisfaction. Extensive longitudinal studies would be particularly appropriate to determine the causal relationships between these variables.

Conclusion

Although this study has some obvious limitations, we believe that it has considerable implications for future work on emotion. Most importantly it can provide a realistic context for laboratory studies on emotion, which generally use mild inductions or contrived situations, are conducted with psychology undergraduates and can therefore not be considered as representative of real-life emotions. We conclude with a plea for more actuarial studies on emotion, both in the form of event sampling in large-scale surveys, as reported here, and in the form of time sampling for small groups of individuals. The findings of such studies can greatly help to understand when and how emotions occur in real life, and the relative frequencies and importance of different types of emotions, as well as emotion antecedents and reaction profiles. Our results confirm earlier suggestions in the literature that information about the patterns of emotional experiences and trait emotionality may help to better understand the risk factors for ill-being and ill health.

In closing we address one of the most hotly debated issues in emotion psychology: the structure of emotion differentiation and the nature of the conscious feeling states that enable individuals to report on such episodes. We suggest that spontaneous descriptions of the most noteworthy emotion an individual experienced *yesterday*, including a verbal label or short expression in the person's own words to describe this experience, may provide useful information for the debate.

Different types of emotion theories make different claims about the most appropriate categorization of different emotional states, ranging from one-dimensional theories that reduce emotion to positive-negative affect, over bidimensional theories proposing a valence-arousal space for emotion classification, to discrete-emotion theories postulating a small number of basic or fundamental emotions. In contrast componential appraisal theories generally opt for a larger number of more differentiated emotional states as the result of specific appraisal processes (see the detailed overview of different emotion models in Scherer, 2000; Scherer and Peper,

2001). In the latter tradition, Scherer's component process model postulates that, in principle, there are as many different emotions as there are distinguishable profiles of appraisals (Scherer, 1984). In reality it is expected that a limited number of frequently encountered appraisal-outcome profiles produces a restricted set of *modal* emotions, an assumption which shares some characteristics, but not the underlying theoretical rationale, with the notion of basic emotions (Scherer, 1994, 2001a).

With respect to subjective feeling, the conscious representation of the emotional episode, a parallel debate exists in the literature: one-dimensional valence theories argue for a primacy of positive versus negative feelings (e.g. Murphy and Zajonc, 1993; Zajonc, 1984), bidimensional theorists postulate "core affect" constituted by valence-arousal judgments (Russell, 2003; Russell and Barrett, 1999), and discrete-emotion theorists propose that feeling categories are constituted according to the prototypical response patterns for basic emotions. In contrast Scherer (2004, in press) has argued that there are an almost infinite number of different feeling states, constituted by conscious and unconscious integration of appraisal and response processes. These correspond to *qualia* that are labeled by an individual, when so requested, using the verbal means of expression provided by the respective language and the individual's semantic ability and preferences. We feel that the empirical data on how people spontaneously describe an emotion they experienced yesterday are important for the debates concerning the structure of emotion and feeling. We submit that the very richness of the spontaneous emotion descriptions we collected argues against the notion that emotional experience is organized around one or two dimensions, or even a small set of basic emotions. Normal adults from many walks of life, unaffected by the study of psychology, seem to use the full panoply of the emotion lexicon to describe their affect states, even in a brief questionnaire. It seems reasonable to expect that this richness of verbal description reflects an even greater richness and differentiatedness of subjective feeling, which in turn will affect the emotion process as a whole.

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Notes

1. At the time the study was conducted, the use of anonymous cell phones was less common than it is now, and almost all households in Switzerland had a wall telephone connection and a listing in the phone book.

2. This sample does not exactly correspond to the demographic proportion in the population, which is 63.7 percent German-speaking and 20.4 percent French-speaking individuals (Office Fédéral de la Statistique, 2000).

3. The lower response rate in 2001 might have been due to the fact that the mailing reached possible respondents at the beginning of December, which might have interfered with holiday preparations. People living with children were probably less likely to respond to the 2001 survey, as suggested by the relative percentages in Table 1.

4. We thank Pfizer Switzerland for providing the Prime-MD patient-questionnaire versions for German and French and for the permission to use the instrument in this study.

5. As always in comparative studies that use different languages, there is the problem of translation, especially for emotion terms. In order to obtain the highest degree of equivalence, we used back translations for the questionnaires, particularly for the emotion items, but we also relied on the intuitions of the bilingual members of the research team who function daily in both linguistic settings.

6. Copies of the coding systems and of the Excel program can be obtained from the first author.

7. Given the highly variable format of answer categories across the nine descriptors, the use of factor analysis or cluster analysis seemed ill-advised.

8. In choosing the 10 most frequent emotion classes, we did not include the general positive and negative categories, which were considered to be too heterogeneous to compare with discrete emotions.

9. We do not report the numbers for relative risk for the two cohorts of experiencing the emotion or not because there is little difference in the odds ratio in the case of our data.

10. There is an under-representation of lower socio-economic groups.

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