

Happiness is the Frequency, Not the Intensity, of Positive Versus Negative Affect

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Abstract In this chapter we suggest that “happiness,” or high subjective well-being, is more strongly associated with the frequency and duration of people’s positive feelings, not with the intensity of those feelings. People who rarely or never feel euphoria, for instance, can nonetheless report very high levels of well-being. We hypothesize that there are several reasons that subjective well-being is more strongly associated with the amount of time people feel positive versus negative feelings rather than with the intensity of their positive feelings. Intense positive feelings often have costs, including a tendency to more intense negative feelings in negative situations. Another hypothesis is that it is more difficult to accurately measure the intensity of feelings than their time-course, and this makes the amount of time people feel positive more amenable to study with self-report methods. The intensity of people’s positive emotions should not be ignored, but should be studied in combination with the time-course (frequency and duration) of positive and negative feelings.

Introduction

When people seek happiness, some desire to be happy most of the time, even if only mildly so, whereas others appear to live and plan for rare but intense moments of ecstasy. The question addressed here is whether frequent positive affect, intense positive affect, or both are necessary and sufficient for happiness. One common sense view suggests that happiness is greatest when one has the maximum of both frequent positive affect *and* intense positive affect and only minimal amounts of non-intense, negative affect. But many people would suggest that either frequent (but mild) or intense (but infrequent) experiences of positive affect are necessary or sufficient to produce a happy life.

We will argue that happiness researchers should assess primarily the relative frequency of positive versus negative emotional experience. The first reason for this

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contention is that the relative frequency of positive emotions can be more accurately and validly measured, a consideration that is fundamental to scientific work on the concept of happiness. A second reason that researchers should focus on the relative frequency of positive versus negative affect is that frequent positive affect is both necessary and sufficient to produce the state we call happiness, whereas intense positive experience is not. Thus, what we call happiness seems to actually be comprised of frequent positive affect and infrequent negative affect.

The final reason to emphasize the relative frequency of positive affect in the study of happiness is that intense positive experiences can, surprisingly, have undesirable features. These features tend to offset the benefit of intense positive emotions, making it questionable whether intense experiences in the long run are more valuable to the individual than less intense ones. Thus, although intense positive experiences are individually desirable at the time they are experienced, they may be less related to long-term well-being or happiness because of unattractive side effects, as well as because of their rarity.

In sum, there are several strong justifications for defining and studying happiness as the relative frequency of positive experiences rather than the intensity of positive affect. Although intense positive emotions are an interesting phenomenon in their own right, it is doubtful that they are closely related to the longer-term state we refer to as “happiness” or “subjective well-being.”

In this paper we will refer to the “frequency of positive affect,” which is a shorthand way of referring to the relative per cent of time individuals are happy versus unhappy. Although we call the percent of time experiencing predominantly positive affect the “relative frequency of positive affect” (Diener, 1984; Diener, Larsen, Levine, & Emmons, 1985), it should be noted that we mean frequency in terms of time sampling, and it is therefore the overall percentage of time the person is in a predominantly positive (as opposed to negative) emotional state. When the intensity of positive emotions is discussed, we mean the average intensity of affect when a person is experiencing positive emotions.

Measurement

One important reason for scientists to focus their attention on the frequency of positive affect in understanding happiness is that frequency of affect is more easily and accurately measured than affect intensity. Scientific research, in contrast to other approaches to knowledge, relies heavily on accurate measurement of the concepts which are studied. There are reasons to believe that frequency of positive affect measures are accurate, and perhaps approximate an interval or even ratio level of measurement. Frequency information can be encoded in memory, accurately recalled from memory, and can be reported in a way that is comparable across persons. Evidence has shown that people are more able to accurately estimate frequency of affect and are less biased in its recall than they assess the intensity of emotional experiences. This is perhaps one reason that most measures of happiness do in fact reflect the frequency of positive experiences to a much greater degree than they reflect intense positive emotions.

Brandstätter (1987) has argued that persons can clearly tell whether or not they are happy or unhappy at a particular time. In his terms, there is a natural “point of indifference” in emotion, above which people feel positive and below which they feel negative. The judgment of happiness versus unhappiness is facilitated by the fact that when one type of affect is dominant, the other type exists, if at all, at low levels (Diener & Iran-Nejad, 1986). Therefore, because individuals can tell when they are experiencing positive and/or negative affect and can usually judge which is stronger, it is possible for them to store frequency of affect information in memory.

In contrast to frequency information, the intensity of affect is likely to be more difficult to encode because there is no natural system by which to define or label emotional intensity. As one becomes more intensely joyful, it is difficult to calibrate this experience, and therefore, difficult to encode the intensity accurately. How can one clearly distinguish levels of emotional intensity and encode them in comparable ways from one occasion to the next? Frequency information can be encoded because people know whether they are happy or unhappy, joyful or fearful, whereas for intensity, there is no such discrete event. At best, individuals might be able to encode the intensity of their own emotional experiences in an ordinal way.

There is empirical evidence that frequency information can be more accurately recalled than intensity information. Hasher and Zacks (1979, 1984) have shown that people are particularly accurate at recalling frequency information in general. These researchers even hypothesize that humans may be biologically prepared to store such information, and review data which show that people can be accurate in retrieving the frequency of events and objects in their experience.

In the domain of internal experiences such as affect, people may also be much more accurate at recalling frequency information than intensity information. We have collected evidence which shows that people are less accurate in recalling intensity information, and that their intensity estimates are biased by the actual frequency of their emotions. In our laboratory Thomas (1987; Thomas & Diener, 1988) has examined the accuracy of memory for one’s own moods. Across a series of studies he found that people are accurate at estimating the per cent of time they are happy. For example, in one study subjects estimated that they were happy 72% of the time on average and later mood recording indicated that they were happy 78% of the time. The estimates correlated substantially across subjects with their later experiences.

In contrast, subjects were much less accurate at recalling the intensity of their emotions. Their estimates were almost twice the actual daily values in an absolute sense and showed little correlation across subjects with the daily intensity figures. Because people’s most emotional times are most salient in memory, they tend to greatly overestimate in an absolute sense their emotional intensity. Furthermore, subjects’ intensity estimates correlated with how frequently they were actually happy more highly than they correlated with their emotional intensity as sampled over time. In other words, subjects seem to retrieve frequency information when they are trying to estimate intensity.

It is also likely that emotion reports are more comparable across people when they report frequency rather than intensity information. How can we ever know if mood intensity reports have similar meanings across respondents? A person can tell us if she is experiencing positive or negative affect and this appears to have very

similar meaning across people because basic emotional experiences are largely universal. Reports of frequency are thus probably comparable across persons because they are the summation of positive and negative emotions which have cross-person meaning. But when a person tells us that she is *moderately* or *very* happy, what does this mean? There is simply no cross-person metric to make such judgments. Because the experiences are internal, it is hard to reach a consensual definition of response alternatives in the emotional intensity domain. Thus, it appears that frequency of positive affect should be easier to measure because it represents the summation over time of a discrete state variable, whereas intensity is very problematical to assess because it is a continuously distributed unobservable which can be scaled idiosyncratically by subjects. Furthermore, it should be noted that to some extent affect frequency reports are themselves unreliable because subjects label their emotions differently, the intensity of these emotions will thus be even more problematical to assess.

One other benefit in measuring the frequency of positive affect is that, in considering levels of measurement, frequency information has both interval and ratio properties. A person who is happy 40% of the time can legitimately be said to be happy 10% more of the time than a person who is happy only 30% of the time. Furthermore, it is meaningful to say that a person who is happy 80% of the time is twice as happy as a person who is happy only 40% of the time. In contrast, we cannot be sure that mood intensity information given by different subjects is even ordinal. For example, can one be sure that individuals who describe their positive moods as “quite strong” are really experiencing more intense affect than persons who describe their moods as “moderate”? Certainly we cannot be certain what response would be twice as strong as another because it is not even clear what this might mean. Thus, mood intensity measures are more likely to have nominal or perhaps ordinal properties rather than the more sophisticated measurement properties which characterize mood frequency measures.

Finally, response artifacts or biases appear to be a greater potential problem in measuring intensity than in assessing frequency of affect. For example, number-use response sets such as extremity bias (a subject’s tendency to use very high or low numbers regardless of a question’s content) are more likely to influence the reporting of intensity information. Frequency measures with concrete anchors such as the percentage of time the person is happy are less likely to be influenced by such response sets. When one uses time sampling methods of recording mood at particular moments, number use response sets are still a major potential problem for intensity reports, but seem to be unproblematical for reports of whether the person is happy or unhappy. When one “beeps” persons at random moments, their mood intensity report is still quite vulnerable to response artifacts such as extreme number use. But an indication of whether one was predominantly happy or unhappy when the pager sounded is much less susceptible to such artifacts. Social desirability is the tendency of some individuals to give responses which are desirable in that culture. In terms of social desirability, we (Diener, Sandvik, Gallagher, & Pavot, 1988) have found that the correlation between this variable and frequency of happiness reports reflects a substantive individual difference characteristic which actually enhances

well-being. In other words, individuals who tend to respond in socially desirable ways are truly happier individuals (even when measured by nonself-report measures). Individual differences in social desirability are, therefore, not damaging response artifacts in the case of frequency of happiness reports.

In conclusion, there are both theoretical and empirical reasons for believing that frequency measures are more accurate, more comparable across subjects, and can be measured with scales which have more sophisticated properties. Therefore, it appears that the typical measurement of positive affect with a single self-report is much more likely to be veridical if it assesses frequency rather than intensity information because people can store and recall this information more accurately. In the next section evidence will be reviewed which shows that frequency of affect information is strongly reflected in subjects' questionnaire reports of happiness, again indicating that such frequency information must be stored in memory. The next question to be addressed relates to the validity of equating the frequency of positive affect with happiness. Although frequency of positive versus negative affect can be measured with some accuracy, is it really what we mean by happiness?

The Composition of Happiness

In this section it will be shown that frequent positive and infrequent negative affect correlate much more strongly with happiness measures than does the intensity of positive affect. Even more noteworthy, it will be demonstrated that relatively frequent positive affect is both *necessary and sufficient* to produce high scores on a variety of happiness measures. In contrast, those with intense positive emotions are sometimes happy, but are not always so. Thus, we maintain that happiness should be defined as relatively frequent positive affect and infrequent negative affect because this is the common ingredient reflected in widely varying measures of well-being. In other words, measures of subjective well-being all reflect an underlying unitary phenomenon (frequency of positive versus negative affect), and this state is separate from other phenomena such as intense positive affect. Subjective well-being measures all converge on the property of frequent positive affect, indicating that this experience is the essence of a phenomenon which can be labelled "happiness."

We have examined three major self-report measures of happiness as they relate to the frequency and intensity of positive affect in several samples. In the studies reported here we administered the Fordyce (1977) global happiness scale, along with two other widely used scales—Bradburn's (1969) Affect Balance Scale and the 7-point Delighted-Terrible scale of Andrews and Withey (1976). We then assessed the moods of our subjects over a period of six to eight weeks. During this time we measured both the frequency and intensity of positive affect (e.g. see Diener & Emmons, 1984; Diener et al., 1985). We have assessed these variables both at end of the day measurement times, as well as at random moments throughout each day, with parallel results. Frequency of positive affect was defined in our studies as the percentage of time individuals were experiencing positive affect at levels which exceeded their level of negative affect. Intensity of positive affect was the average

Table 1 Predicting happiness scale scores from frequency and intensity of positive affect

	Regression betas					
	Freq	<i>N</i> = 42 PI	Freq	<i>N</i> = 62 PI	Freq	<i>N</i> = 107 PI
Fordyce	0.58***	0.23	0.58***	0.22*	0.53***	0.29***
Bradburn	0.41**	0.22	0.39**	0.06	0.39***	0.21
Andrews and Withey ¹	0.42***	0.24	0.37***	0.23	0.49***	0.25**
Partial correlations						
Freq with PI controlled	Partial <i>r</i>		Partial <i>r</i>		Partial <i>r</i>	
Fordyce	0.60***		0.57***		0.56***	
Bradburn	0.42**		0.38***		0.38***	
Andrews and Withey ¹	0.43**		0.38***		0.48***	
PI with freq controlled						
Fordyce	0.28*		0.26*		0.34***	
Bradburn	0.24		0.07		0.20*	
Andrews and Withey ¹	0.27*		0.25*		0.25**	

¹ Reflected.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

intensity of positive affect when the person was happy (experiencing more positive than negative affect). Table 1 shows how well the daily frequency and intensity of positive affect correlate with the happiness measures across the three groups. As can be seen, the results of the three studies are quite similar, as are the results across the three measures of happiness. The regression analyses shown in the top of the table reveal that frequency of positive affect is always a much stronger predictor of happiness reports than positive emotional intensity. The bottom half of Table 1 presents the partial correlations between the happiness reports and the frequency and intensity of positive affect. Because frequent and intense positive affect correlated in one of our samples, the partial correlations are given to show the amount of unique variance in the happiness reports associated with frequency and with intensity. Once again, it can be seen that traditional happiness measures are much more strongly related to the frequency of positive affect than to its intensity. These results are particularly striking when it is considered that these three happiness scales mention nothing about the frequency of positive or negative affect. Indeed, the wording in some of the measures reflects intensity content.

Further light can be shed on the question of the importance of frequency and intensity of positive affect for happiness by turning to the combined results of several of our studies. We were able to identify a number of individuals who were high in frequency (above 80%) and very low in intensity (“slightly” or “somewhat” intense positive affect). *All* seven of these individuals reported very happy scores on the Fordyce Scale ($M = 7.86$). In contrast, *none* of the three individuals who were very high in positive emotional intensity (“much” or “very” intense positive affect), but

below 50% in frequency of positive affect, reported scores in the happy range on the Fordyce Scale ($M = 3.00$).

We have also examined affect balance scores derived from our daily mood recordings. Affect balance is computed by subtracting the average negative affect level for a day from the average positive affect level for a day. Subjects' frequency of positive affect scores correlated a very strong 0.86 with this affect balance score, whereas the positive intensity score correlated a more modest 0.28 with daily affect balance ($N = 62$). Thus, happiness measures sampled over time also reflect primarily the influence of frequency of positive versus negative affect rather than the intensity of positive affect.

What of the common sense idea that those who are happiest are actually those who have frequent and intense positive affect and infrequently experience only low intense negative affect? Certainly such a formula for happiness seems intuitively appealing, but we have thus far found little empirical support for it. For a sample of 107 subjects, we correlated happiness self-reports with the relative frequency of positive affect. We also correlated the happiness measures with the following formula: frequency of positive affect times positive affect intensity, minus frequency of negative affect times negative affect intensity. This formula score correlated $r = 0.95$ with the relative frequency of positive versus negative affect, suggesting that intensity information normally adds little to the prediction of happiness. Furthermore, this formula score correlated less well than the relative frequency of positive affect with the Fordyce Happiness score (r 's of 0.67 versus 0.69), the Bradburn Affect Balance score (0.51 versus 0.53), and the Delighted-Terrible Scale (0.70 versus 0.72).

In addition to the above analysis, we correlated daily *average* positive affect and negative affect with the happiness scales. We also correlated the frequency that positive and negative emotions were each felt with the happiness scales. These frequencies correlated with the happiness scale scores as well as the daily affect averages. This is noteworthy because the averages reflect the intensity of one's emotions as well as the frequency. When average positive and average negative affect were used to predict the Fordyce happiness scale score, for example, a multiple correlation of 0.60 resulted. When the frequencies of positive and negative affect were used to predict the Fordyce score the multiple R was higher—0.63. Clearly, weighting the frequency of positive affect by its intensity seems to aid little in the prediction of happiness. Thus, the relative frequency of positive versus negative affect is the factor which appears to comprise affective well-being.

The above data indicate that self-reports of happiness reflect frequency of positive affect to a greater degree than the intensity of positive affect. Furthermore, these results generalize to nonself-report measures of well-being, suggesting that frequency of positive affect is not merely what subjects report on happiness scales. In one study we obtained several nonself-report measures of happiness: an expert rating of well-being based on a structured written interview; peer reports of happiness; and a memory based affect balance measure of well-being comprised of the number of happy versus unhappy life events subjects could recall in a timed period. Each of these well-being measures was predicted by the daily relative frequency and

Table 2 Multiple R's squared predicting nonself-report scales of happiness

	Memdiff ¹	Expert ²	Peer ³
Entering frequency first as predictor			
Frequency of positive affect	0.21***	0.30***	0.57***
Intensity of positive affect	0.23*	0.30	0.57
Entering positive affect intensity first as predictor			
Intensity of positive affect	0.14***	0.13***	0.22***
Frequency of positive affect	0.23***	0.30***	0.57***

¹ Memory difference measure of happiness.

² Expert rating of happiness based on structured interview.

³ Peer-reported measure of happiness.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

intensity of positive affect of subjects. As can be seen in Table 2, both predictors can predict significantly when entered first in the prediction equation. Only frequency, however, predicts when entered second, and it does so for all three measures. The results indicate that frequency and intensity share common variance in this sample which predicts the nonself-report happiness scales. In addition, frequency has unique variance which predicts the measures, but intensity does not. Self, peer, and expert ratings, as well as a memory based assessment of happiness, all seem to depend more heavily on the frequency of positive affect. This finding again suggests that the frequency of positive versus negative affect is at the core of a construct we can label happiness or affective well-being.

We turn now to the questions of whether frequency of positive affect is necessary and sufficient for happiness, and whether intense positive emotions are necessary or sufficient for happiness. Necessity and sufficiency are strong conditions which, if met, suggest that frequency or intensity are not merely influences on happiness, but may be the defining characteristics of happiness. Table 3 shows several happiness scores for individuals differing in their frequency of positive affect. In order to determine whether frequent positive affect is necessary or sufficient for happiness, individual data must be examined rather than group averages. This is because single individuals can invalidate the propositions that frequent positive affect or intense positive affect are necessary or sufficient for happiness by providing a single contradictory instance. The high frequency group is comprised of those thirteen individuals (out of 107 subjects) with complete data who showed predominantly positive affect on all forty-two days in which they were queried. The eight low frequency individuals were those who reported predominantly positive affect on fewer than one-half of these days. Because there were few individuals in this sample who were infrequently happy, a less stringent cutoff was mandated for the low group, a division which is not optimal for the present argument. Nonetheless, the results are quite revealing.

The Memdiff score shown in Table 3 refers to the number of positive events the subjects could recall and list from their life and last year in a five minute period, minus the number of negative events in his or her life and past year recalled in

Table 3 Happiness scores of individuals differing in frequency of positive affect

Subject number	High frequency				
	Sex	Memdiff	Expert	Fordyce	PI
9	F	1	4	8	15.7
19	F	22	4	8	19.0
22	M	4	4	8	15.2
39	M	4	5	7	8.2
63	M	15	4	8	15.0
70	F	5	3	8	12.2
75	M	4	4	8	17.3
76	F	9	4	8	8.9
8	M	4	5	8	17.1
117	F	16	4	8	16.0
118	F	20	6	10	19.7
123	F	10	4	8	18.7
125	F	1	4	8	12.0
Low frequency					
16	M	-4	2	6	6.5
69	M	-4	1	2	5.8
84	M	-13	1	2	5.3
86	M	7	2	5	8.4
96	F	-9	2	7	11.8
97	F	-1	2	4	9.1
132	M	-2	2	4	14.3
134	M	-7	1	2	10.2

a separate five minute period. As can be seen in Table 3, only one infrequently happy subject (number eighty-six) remembered more positive than negative events, whereas all of the frequent positive affect group did so. Similarly, the expert rating clearly discriminated between the two groups: in fact, virtually perfectly. The expert rating varied from zero (extremely unhappy) to six (extremely happy), with three being the neutral point. These ratings were made blind as to the subjects' identities, yet only one neutral rating (for subject number seventy) failed to perfectly place the individuals into happy versus unhappy groups. Finally, the subjects' Fordyce scores (varying from zero to ten, with five being the neutral point) properly classified individuals in almost every case. Peer reports were also collected but are not presented in Table 3. There was little overlap between the two frequency groups in the peer happiness ratings. Peers erred, however, in the direction of believing that the low frequency subjects were happier than the other happiness measures revealed them to be.

Given that some low frequency subjects were not that extreme in terms of frequency, and that some normally happy individuals may have been unhappy during the six week sampling period used to measure frequency, the discrimination among the groups is remarkable. Although a definitive case cannot be made for the idea that frequent positive affect is necessary and sufficient for happiness, these data indicate that this is a strong possibility. Every individual who experienced frequent positive

affect was happy on virtually every measure. And every individual who experienced infrequent positive affect was unhappy on virtually all of the measures. From this pattern it appears that frequent positive affect is sufficient for happiness. Because no individual with infrequent positive affect scored in the happy range on more than one of the three scales reviewed above, it also seems likely that frequent positive affect is necessary for happiness. We suggest that if a more extreme infrequent positive affect group was examined (e.g. predominant positive affect 20% or less of the time), the case for the necessary and sufficient connection between happiness and frequency could be made without reservation.

In reference to intensity, there are several noteworthy findings in Table 3. Firstly, it can be seen that in this sample there is a tendency for the intensity and frequency of positive affect to be related, although we have not found this to be true in other samples. Secondly, it appears that intense positive affect is neither necessary nor sufficient for happiness. Low frequency subject number 132 experienced intense positive affect, yet was unhappy on every measure. In contrast, high frequency subject numbers thirty-nine and seventy-six had low intensity positive affect, yet were happy on every measure. It appears that frequent positive affect is sufficient for happiness regardless of its level of intensity, but that intense positive affect is neither necessary nor sufficient for happiness.

Intense Positive Affect

In this section it will be argued that intense positive experiences are less related to long-term well-being not simply because of measurement considerations. In other words, frequency of positive experiences are reflected to a greater degree in well-being measures not only because they can be accurately recalled or more validly measured across subjects. There are also even more substantive psychological reasons related to affective dynamics that intense positive emotions are only weakly related to the state of long-term happiness. In the first place, extremely positive experiences are quite rare and are therefore less likely to be important to global well-being. In the second place, there are both empirical and theoretical reasons to believe that intense positive experiences often carry emotional costs in terms of being accompanied by increased negative affect and lowered positivity of other good experiences. Thus, intense positive experiences may be counter-balanced by opposing forces in such a way that they do not greatly enhance long term well-being and are therefore not strongly reflected in happiness measures.

Rareness of Intense Positive Affect

It is unlikely that intense positive emotional experiences form the core of well-being because these experiences are so uncommon. In contrast, the frequent experience of mild levels of positive affect seems to occur quite often. Sigmund Freud recognized

the difficulty in maintaining intense happiness when he wrote that the experience of intense positive affect is limited by our biological constitutions. Flugel (1925) found that the half life of extremely positive moods is very short—the more intense the mood, the shorter it lasted.

In our research based on time sampling, we have found that the extremely intense moods are quite unusual. For example, a sample of 133 subjects reported on their daily moods for forty-two days. Of the total 5,586 days assessed, extremely positive affect was reported on only 2.6% of the days. We also signalled the subjects at random moments at which time they completed mood reports. Of the 3,639 moment reports, 1.2% were marked as extremely intense on the positive mood adjectives. In another study of forty-two subjects, the respondents were asked to indicate their maximum mood for each day. Of the 1,756 reports, 266 or 15% showed a maximum mood sometime during the day of “extremely” happy. It is clear that extremely intense positive moods are quite rare. This is even more dramatic because the subjects were in general quite happy and in a youthful age group which more frequently experiences intense emotions than most adults (Diener, Sandvik, & Larsen, 1985). Because these subjects reached an extremely happy state about once a week and for about one per cent of their waking time, we would expect intensely happy moods very infrequently in older samples.

Finally, we have found that extremely positive events are relatively uncommon. In one study we asked subjects to write down the best thing which happened to them each day. We then had coders rate the events in terms of how good the events were on a 5-point scale ranging from neutral to extremely good. Only one of the 3,214 events was rated as extremely good and only thirty-seven or 1.2% were rated as very good. The vast majority of events were rated as slightly or moderately good. Again, we can see that intense positivity is a very scarce commodity. Indeed, if an event occurred frequently it would probably lose its intense character. It seems unlikely that subjective well-being is built on experiences which occur so seldom.

The Prevalence of Frequent Positive Affect

When we turn from intense positive emotions to positive affect in general, a very different picture emerges; positive moods at less intense levels occur most of the time for the majority of our subjects. This fact squares nicely with the finding in all large-scale surveys that the majority of respondents claim to be happy. In a sample of 210 subjects, our respondents reported a preponderance of positive over negative affect on 75% of their days. Only 8% of the subjects were happy less than half of the times. Figure 1 shows the distribution of the per cent of days these subjects were predominantly happy. As can be seen, the distribution is highly skewed, with a plurality of subjects reporting a high percentage of happy days. At the same time, the average intensity of the happy days was only 3.2 on a zero to six scale, a response anchored by “moderate” in reference to how intensely the positive mood adjectives were being felt. Thus, it appears that our subjects experience weak levels of positive affect most of the time.

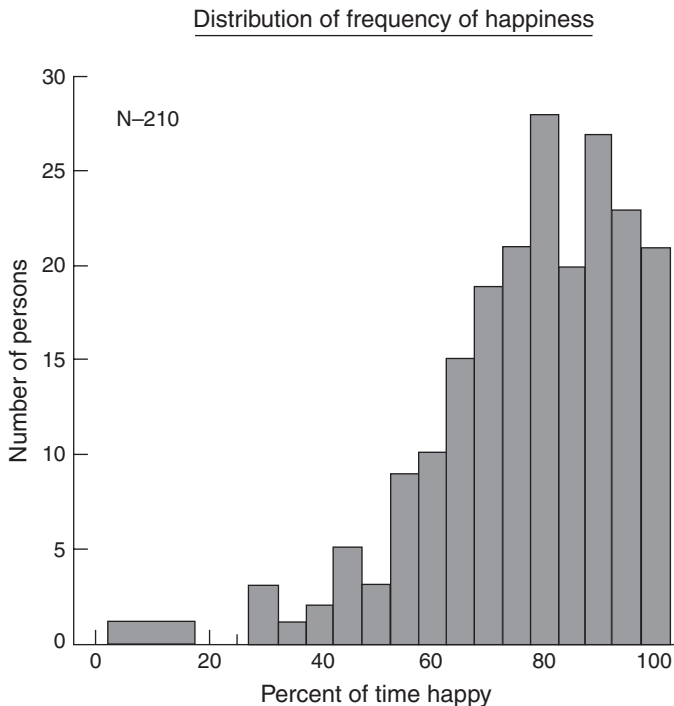


Fig. 1 Amount of time individuals experience positive versus negative affect

Costs of Positive Intensity

In addition to their rarity, there appear to be affective costs related to intense positive emotional experiences and these may counterbalance the good effects of these experiences in terms of long-term subjective well-being. Early thinkers recognized that intense positive emotions can involve a price. For example, the Epicureans counselled that happiness lies in quiet of the mind and not desiring things too strongly. Similarly, the Stoics believed that individuals should avoid extreme “highs.” In *The Discourses*, Epictetus (1952) suggested that when we are delighted with a thing, we should temper this delight by thinking of its loss. Thus, if we lose the thing, we will be less disappointed. Epictetus recommends that we not allow our pleasures to go too far; we should check or curb them. Implicit in both Epicureanism and Stoicism is the idea that very intense positive affect can lead to more intense negative affect, a price that can be high. Similarly, Freud (1930) in *Civilization and Its Discontents* wrote that wild, untamed craving can lead to more intense satisfactions than curbed desires. On the other hand, he recognized that such unbridled desires also cause greater displeasure when they are not satisfied. Furthermore, he believed that we are so constituted that we can only intensely enjoy contrasts. It is impossible to attain uninterrupted intense positive affect. We will review theoretical and empirical works which indicate that one does indeed at times pay affectively for experiences

of intense positive affect. Intense positive affect is not entirely a blessing and is therefore less related to long term emotional well-being.

In our studies on the temperament of emotional intensity, we have repeatedly found that those people who experience the most intense positive affect are likely to be those who will experience the most intense negative affect when unhappy (Larsen & Diener, 1987). For example, when we asked subjects to complete mood reports when they felt quite emotional, the relationship across persons between their intensity of positive feelings when they were happy and their intensity of negative feelings when feeling unhappy was strong $r = 0.80$. Thus, one reason that happiness reports do not correlate more strongly with positive emotions intensely is that the same individuals who are experiencing positive emotions intensely are also likely to be experiencing negative emotions more intensely.

If we examine factors which intuitively lead to intense positive affect, we find that most of these inputs can also heighten the intensity of negative affect. For instance, if a person works hard and long to gain some goal (high effort), intense positive affect will be experienced if the person is successful in reaching the goal. If the person fails to reach the goal, however, intense negative affect will ensue. One reason that subjects who experience positive events in an intense way are likely to experience negative events in an intense way also is that these individuals think of specific outcomes as quite important. For example, if a person thinks that the local team's winning of the next ball game is quite important because he identifies with the team, a win will produce more intense positive affect. But a loss will produce more intense negative affect. Similarly, if persons have their heart set on getting a particular job because it fulfils certain personal motives, receiving an employment call will make them quite happy. But they will also be more disappointed if they do not receive the offer. This phenomenon is what Freud meant by unbridled desires leading to more intense pleasure *or* to more intense displeasure. Thus, persons can achieve intense positive emotions by giving their goals a high subjective valence. If most of persons' goals are considered by them to be enormously important, they are likely to experience more intense positive emotions when the goals are reached. But in magnifying the importance of their goals, the persons will increase the intensity of their negative emotions whenever a goal is not attained.

Another related reason some people feel emotions intensely is because of certain cognitive styles. For example, the Freudian mechanism of repression would be likely to dampen the intensity of a person's negative affect. Interestingly, Davis and Schwartz (1987) found that repressors experienced both negative and positive affect less intensely. In other words, not only might repression lead to less intense negative affect, but the dynamics involved also seem to take the edge off positive emotions. Similarly, Gorman and Wessman (1974) found that repressive subjects reported less intense negative emotions, but were also less capable of hitting high peaks. The repressive subjects showed more shallow affect and less mood variability. Although repression has usually been studied in terms of negative affect, it may be that it blunts all types of emotions.

We have recently examined how cognitions can be used by individuals to blunt or dampen emotions. We asked subjects to list the best and worst event which

happened to them each day for four days. We also requested that they write down each day their thoughts when these events occurred. Coders rated these thoughts for their emotional amplifying and emotional dampening qualities. It is noteworthy that those who showed the most amplifying thoughts for positive events also amplified their negative emotions the most, and a similar pattern occurred for dampening thoughts. What this and other laboratory studies (Colvin, Pavot, & Diener, 1988; Diener, Smith, Allman, & Pavot, 1988; Larsen, Diener, & Cropanzano, 1987) show is that when persons increase their use of either a dampening or an amplifying strategy in relation to positive stimuli, this is likely to carry over to negative stimuli as well. Thus, cognitions which allow high peaks or intense positive emotions will also lead to more extreme lows when one encounters a negative event.

Another reason that people are intense in their emotions is because of greater arousal or physiological reactivity. For example, Larsen and Scheffer (1987) showed that skin conductance was higher for emotionally intense subjects when they were exposed to either positive *or* emotional slides. Some individuals may have greater arousability and therefore experience intense positive affect in less extreme circumstances than others. These persons, however, are also likely to experience more intense negative emotions in unpleasant situations.

Our work and that of others suggests that a number of interrelated factors which influence the intensity of positive emotions also influence the intensity of negative emotions for the individual: high assessment of the importance of events; repression; cognitive amplifying and dampening strategies; and physiological reactivity. The end result of these mechanisms is the same: to amplify or dampen both positive and negative affective responses. Thus, it seems that in the long run in people's lives, many high peaks will be paid for to some extent by lower lows when the person becomes unhappy. There appear to be long-term individual differences in several of the factors which heighten emotional intensity. Therefore, some individuals will consistently show more intense positive reactions to the world, and also more intense negative reactions. In addition, an individual may show a more intense reaction to a particular event or situation. But factors such as being aroused or greatly wanting a particular outcome can heighten either the positive or negative response intensity in specific situations.

Opponent Process Theory

There are formal theories which maintain that there are costs related to intense positive emotions. Solomon's (1980) opponent process model predicts that intense emotional peaks often come at the cost of negative affect. According to this theory, novel positive events can produce high peaks. But these novel events are quickly habituated to and thereafter lead to only mild positive reactions. The other course to very positive emotional reactions is to have first suffered negative events. If a negative event occurs over time (e.g. being in prison) so that the person adapts to it, its withdrawal can then produce intense positive affect.

It can be predicted from the theory that extremely positive events will inevitably be quite rare. They must either be based on novelty (which is rare) or on habituation to a negative event which necessarily means that the person has suffered for a period of time in order to experience the intense positive event. Solomon also maintains that positive experiences can plant the seeds for unhappiness because the loss of the positive things will cause withdrawal or negative affect. The theory supports the current argument in suggesting that there are often emotional costs to intense positive experiences, especially those which are repeated.

Parducci's Range-Frequency Theory

Another theory which maintains that there are emotional costs to extremely good events is the range-frequency model of human judgments and happiness (Parducci, 1968, 1984; Smith, Wedell, & Diener, 1989). This theory is built on the presumption that all judgments are relative—events are judged in relation to other events. How good or bad an event is judged to be depends on the other events against which it is compared. For an event to produce happiness, it must be judged positively in the context of relevant events. What is noteworthy for the present argument is that extremely bad events create a context in which later good events can produce more intense happiness. Similarly, extremely good events can make future negative events even more negative. Parducci's theory predicts that the intensity of positive and negative experiences influence one another.

Richard Smith conducted a study in our laboratory to demonstrate how the relational property of judgements is affected by intensely good events. He showed subjects grade distributions they might receive in a difficult class. They were shown their scores on fifteen weekly quizzes on which the possible number of points was fifty per quiz. It was stressed that this was a very difficult class with a low grading distribution. The subjects were asked how happy they would feel when earning various grades. One group of subjects received a normal distribution of grades centering around twenty. Another group received the same distribution, but they had one score of fifty. The average happiness various scores would produce is shown in Fig. 2. Not surprisingly, the score of fifty would make people "extremely happy"—a 9.9 on the 11-point scale. But notice what happened to the other happiness values when an extremely high score was received. The lowest score (ten) is seen as more negative if the person had received a score of fifty. Even an otherwise high score (thirty) became less desirable if they had received a score of fifty. The extremely high score is very pleasing in itself, but it lowers the happiness one gains from other good events. Perhaps even worse, it makes the low scores even more painful. The above study is an empirical demonstration of the pleasure-pain connection about which Freud and the Stoics were concerned. The same effect was shown by Brickman, Coates, and Janoff-Bulman (1978) who found that those who won large lotteries were thereafter less happy when small positive everyday events occurred. To quote Parducci (1984):

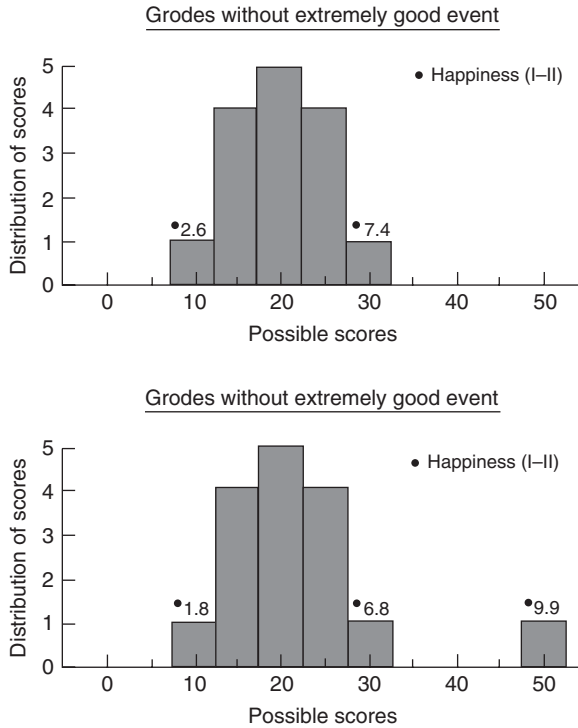


Fig. 2 Happiness judgments for various test scores

One type of “high” that can work against subsequent happiness comes from experiencing a new event better than any that had previously been experienced in the same domain. This new event extends the range upward so that lesser events become less satisfying. Although this makes an immediate positive contribution to the balance of happiness, its long-term effects are harmful unless the new upper endpoint can be experienced with high relative frequency . . .” (p. 14)

Thus, it is clear that intense positive moments may lower the intensity of future positive moments, and that intense positive moments are often purchased at the price of past unhappy moments. It is unsurprising, therefore, that intense positive affect is not closely related to long-term happiness.

Conclusions

The basic tenet of this paper is that happiness or affective well-being can be equated with the relative amount of time a person experiences positive versus negative affect. Frequent positive affect is both necessary and sufficient for the experience of happiness and for high scores on happiness measures. Further study should certainly be

devoted to examining the implications of this idea. This paper, however, advances a number of additional hypotheses which are researchable:

- a. Intense positive affect is neither necessary nor sufficient for happiness, although intense positive experiences might sometimes heighten happiness among those who frequently experience positive affect.
- b. The frequency of positive versus negative emotions can be measured across persons with accuracy and with a sophisticated level of measurement, whereas this is probably not true of the intensity of people's feelings.
- c. Intense positive experiences often follow after a period of deprivation or suffering. In addition, intense positive experiences can cause later events and situations to be evaluated less positively. Thus, intense positive affect tends to be rare and to come with a price.

The above hypotheses are quite important to the field of subjective well-being because they are related to the most basic question of what comprises emotional well-being. Furthermore, these hypotheses are related to the fundamental issues about measuring well-being. Finally, the hypotheses raise interesting general questions about the causes of subjective well-being. The hypotheses we advance are of primary importance to the field, and yet are admittedly speculative. We have collected some data which support them but they have not yet received broad confirmation.

The above arguments raise a number of interesting researchable questions. When are the negative costs of positive emotional intensity exacted and when can they be avoided? That is, are there predictable times that a person will or will not suffer more negative emotions because of intense positive experiences? What factors increase positive emotional intensity and which of these generalize to negative emotional intensity? If seeking or obtaining intense positive experiences can have negative consequences for the individual, it seems imperative that we understand how this occurs because a large number of individuals in our culture are seeking such experiences. Theory should be developed which explains what personality and situational variables will effect the frequency of positive affect, its intensity, or both. A related set of questions has to do with the degree to which people seek and desire experiences which are intense versus those which produce mild happiness spread over time.

Another interesting question has to do with the independence of positive and negative affect (e.g. Bradburn, 1969; Diener & Emmons, 1984; Watson, Clark, & Tellegen, 1984). If these two types of emotions show some degree of independence across persons, it could be that looking separately at their frequencies would give even greater power in understanding happiness. In a sample of 100 college subjects, we found that the relative frequency of positive versus negative affect correlated with the Fordyce happiness scale, $r = 0.57$. When a regression was computed in which the Fordyce score was predicted by the frequency of positive affect and the frequency of negative affect, a multiple R of 0.59 was achieved. It appears that some small increment in knowledge can be gained by separately examining the

frequencies of positive and negative affect, but further work on this issue is clearly required.

The arguments presented in this paper also have important applied implications. It appears that people who are successful at attaining frequent positive affect will be happy. Thus, interventions which aim at increasing happiness should centre on increasing the frequency and duration of happy experiences. The above arguments suggest that interventions or events which lead to intense but relatively infrequent positive experiences are unlikely to enhance long-term happiness to a substantial degree. It could be, however, that expectations about future intense events and the recall of past intense events may in some cases enhance long-term happiness. Therefore, the role of intense positive experiences to happiness needs to be explored in more depth.

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