# EFFECTS OF MOOD AND

# INFORMATION CONTENT ON

# PRODUCT EVALUATIONS

by

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# PREFACE

This thesis constitutes my doctoral dissertation, and is submitted in partial fulfillment of the requirements for the degree dr. oecon at the Norwegian School of Economics and Business Administration.

The dissertation has been organized as follows: In part I, the background for the thesis and the research questions are presented. A brief overview of mood related research is also given. Part II constitutes the theoretical part of the dissertation. Three theoretical issues are discussed; mood states, mood effects, and mood induction procedures. Part III is devoted to design and measurement issues. First a presentation of the model, subjects, and design of the empirical study is given, followed by a discussion of various measurement issues. Part IV has been named Empirical analysis, and in this part, the results from a total of four experiments are presented and discussed. The last part of the dissertation, part V, consists of a discussion chapter. Here the reader will find a summary of the main results, as well as a discussion concerning the strengths and weaknesses of the chosen research design. The implications of the empirical study are discussed, while the last section of the chapter gives guidelines for further research.

The contributions of many individuals made the completion of this dissertation possible. I am primarily indebted to the members of my dissertation committee, Professors Sigurd V. Troye and Kjell Grønhaug at the Norwegian School of Economics and Business Administration, and Professor Joseph F. Porac at Dept. of Business Administration, University of Illinois.

The topic for this study was first suggested to me by Professor Troye. The initial development of the research problem was due largely to his suggestions and guidance. Moreover, he has served as a constant source of ideas and encouragement during all of the latter stages of research and writing.

I had the pleasure of spending the academic year of 1988/89 as a Visiting scholar, at the University of Illinois at Urbana-Champaign. During this memorable stay, Professor Porac acted as my main adviser. I am truly grateful for the hours spent talking with him, and in particular for his suggestions with regard to experimental design and implementation. In the capacity of subject-pool coordinator, Professor Porac gave me permission to use subjects from the subject-pool, and this made the recruitment process so much easier.

Morten Heide
Bergen, Norway
February, 1990

To my loving wife, Nina

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# Part I

# INTRODUCTION

# CHAPTER 1

# Introduction

## 1.1. Background

The concepts of moods and emotions have a long history in scientific thought. Ever since the great philosophers in ancient Greece discussed what impact emotions should have on our lives, researchers both in philosophy and other disciplines have been interested in moods and emotions.

Seen in this background, it is somewhat surprising that the area of consumer behavior, until the last couple of years, did not seem to take moods and emotions into account. Common models of consumer behavior do not explicitly recognize the role of mood states (Gardner, 1985). At best, the term "antecedent state" is used to encompass all of the momentary financial, psychological, and physiological baggage with which a consumer arrives in a marketing interaction (Belk, 1975). In marketing textbooks, mood is rarely treated as a variable in its own right, but often fleetingly referred to under broad terms like "environmental and situational factors" (Gardner and Vandersteel, 1984).

In recent years, this has however started to change. Mainly, because of several important contributions from social and cognitive psychologists, the interest in mood as a marketing variable has increased considerably among researchers. This interest was clearly manifested on the Association for Consumer Research's annual conference in the fall of 1983. On this conference, "Some Effects of Mood on Consumer Behavior" was included as a special session topic.

Concurrently, researchers concerned with survey methodology have taken an interest in the concept of mood. In some contexts the effect of respondents' moods may be viewed as a possible biasing factor in surveys (Gardner, 1985). Seen in this light, mood may be a source of what Bradburn and Sudman (1974) have named response effects, i.e. factors that cause the reported answers to deviate from the true answers.

This dissertation will be positioned at the intersection of consumer behavior and survey methodology. In the empirical part of the dissertation (chapters 7 to 10), results from four experiments are reported. As we shall see later, some of these results will have important implications for both consumer behavior and survey methodology.

## 1.2. Research questions

Research in psychology indicates that mood states exert an important influence on behavior, judgements/evaluations and memory. It can be argued that the behavioral aspect will be the most important one for the discipline of consumer behavior. This is because, the actual purchase decision will determine if the marketing activities have been successful or not. However, the actual purchase decision will in most cases be secondary to an evaluation of the product. In other words, if the evaluation is unfavorable, chances are that the consumer will select another product. The evaluation can again be seen as a result of elements in the consumer's memory, i.e. only product-information that is accessible in memory will be used in the evaluation process. It can thus be argued that memory will be important for evaluations, and evaluations important for behavior. All three components will therefore have relevance for the area of consumer behavior.

In survey methodology it is common to distinguish between behavioral and attitudinal questions. The respondent's memory will be important for both types. If for instance, mood-congruent material is more accessible in memory, under- or over-reporting of certain types of behavior can occur. For attitudinal questions, mood effects on evaluations can be secondary to effects on memory, and the respondent's answers may thus be biased in a mood-congruent direction. It has been argued (Mayer, 1986) that the evaluation-criteria may be more liberal when the evaluator is in a good mood. A respondent in a positive mood, may therefore give more favorable answers to attitudinal questions than would be the case if he or she was in a neutral mood. The possibility of mood-biased answers to attitudinal questions, should thus be apparent. But, mood states may also influence behavior. If for example, people in a good mood are more willing to participate in surveys, the danger of sampling-biases will be present. We can therefore conclude that mood will have relevance also for the discipline of survey methodology.

The empirical part of this dissertation will be restricted to mood effects on judgements/evaluations. The main research questions are concerned with how and when the subjects' mood states will influence their evaluations of various aspects of Norway. In the experiments we will focus both on how the individual aspects of Norway are affected, as well as the impact of mood on the overall evaluation of Norway as a travel destination. One of the major research tasks in this dissertation, will be to study how the effects of information about Norway combined with mood induction will work as opposed to mood induction procedures where no information is given. To be able to answer this question, both conditions were included in the experiments.

## 1.3. Mood related research- an overview

Several disciplines of research have been interested in the concept of mood states. In this section, we will give a brief overview of the different mainstreams of mood related research. A more detailed discussion of findings that have direct implications for this empirical study, will be presented in chapter 3.

### Philosophy

Philosophers have been interested in the concept of emotion, for several millenniums. In ancient Greece, the Stoic philosophers argued that emotions should not have a strong impact on our lives. They advised us to take things as they come and warned that excessive exhilaration would only lead to excessive sorrow. The Epicurean philosophers, on the other hand, told us to experience life at its fullest and most extreme. "Eat, drink, and be merry," they proclaimed "for tomorrow we die".

But, despite its long history in philosophical thought, the concept of emotion was not treated as a subject of its own right. The interest in emotions has often been subsidiary to interests in ethics or "human nature" (Calhoun and Solomon, 1984).

Thus, when the French philosopher Descartes, two thousand years after the great Greeks, advanced a theory of the "passions", this theory was not an autonomous theory, but rather a part of his overall theory of mind and body, with the emotions occupying a middle position between the two (Calhoun and Solomon, 1984). In the

works of Benedict Spinoza, a contemporary of Descartes, emotions were included as a part of his overall ethical theory (Calhoun and Solomon, 1984). Later, in 1739, Hume discussed the role of emotions in his theory of the human nature (see Hume, 1957).

In the nineteenth-century, several path-breaking theories on emotions were introduced. Charles Darwin, who called himself a natural philosopher, studied emotions in the context of evolution. William James was both a philosopher and a psychologist, and in collaboration with the Danish psychologist C.G. Lange, he presented a theory focusing on the physiological aspects of emotions (James and Lange, 1885/1922). The James-Lange theory has influenced both psychology and philosophy, and has been perhaps the most dominant of all theories concerning emotions (Calhoun and Solomon, 1984). A major objection against the theory however, is that it with its heavy emphasis on the physiological reactions that are associated with emotions, tends to neglect the cognitive, behavioral, and other, more sophisticated aspects of emotions.

Sigmund Freud never developed a theory of emotions as such, but his psycho-analytical theories radically changed the whole idea of emotions (Calhoun and Solomon, 1984). It can thus be argued that Freud's works provide an important basis for later theories of emotion.

In our own century, several philosophers have found an interest in moods and emotions. In the continental tradition, great thinkers like Max Scheler, Martin Heidegger, and Jean-Paul Sartre have all developed theories of emotions. Prior to the 1950's, Anglo-American philosophers had not paid nearly as much attention to the concept of emotion as their European colleagues (Calhoun and Solomon, 1984). In the 1950's however this began to change, mainly because of a widely influential article by Errol Bedford called "Emotions". Later, American philosophers like Anthony Kenny and Irving Thalberg have made several important contributions (Calhoun and Solomon, 1984).

According to Calhoun and Solomon (1984), the trend today among philosophers is to focus on emotion as a significant philosophical subject in its own right. There may be two different reasons for this trend:

*"This focus on emotion may mirror the general introversion (some would say "narcissism") of recent years, which has been most apparent at the popular level. But it also shows that there is a need for a comprehensive account of emotion to*

*replace the piecemeal accounts that have inevitably resulted from emotions being given a backseat to other philosophical and psychological issues" (Calhoun and Solomon, 1984, p. 5).*

## Evolutionary theories

The founding father of evolutionary theories of emotions, was undoubtedly Charles Darwin. In his book, "The Expression of the Emotions in Man and Animals" (Darwin, 1872/1955), Darwin recognized that the concept of evolution not only applied to physical features, like skeletons and sensory receptors, but also to behavior and "mental life" of animals and humans, including the expression of emotions (Plutchik, 1980a). Darwin concluded that emotions have evolved with definite functions, which are primarily to increase the chances of survival.

In this century, other researchers have continued in Darwin's path. One of the most extensive contributions is Plutchik's "General Psychoevolutionary Theory of Emotion" (Plutchik, 1980a). First presented in 1958, this theory has been improved several times, and is in its most recent version of 1980, perhaps one of the most complete theories of emotions that has ever been presented.

Research in the evolutionary context seems to have taken two different directions. One direction makes comparisons among different species of animals, to see how different types of emotions have evolved. The other direction focuses entirely on the human species. The main question here is how different cultures express their emotions.

## Clinical psychology

Clinical psychologists have long been interested in the relationship between affect/emotions and mental disorders. The first major contributor in this field of research was probably Sigmund Freud. Near the end of the nineteenth century, Freud discussed problems caused by repression of emotions, and described psychoanalysis as a possible treatment. Various alternative forms of treatment for depression, anxiety and other negative mood-disorders have also received a great deal of attention (see e.g. Beck, 1967).

Some researchers have studied the relationship between mood states and amnesia (see e.g. Diamond, 1969; Nemiah, 1979), while others have studied different mood states in multiple personality cases (Thigpen & Cleckley, 1957; Ludwig et. al., 1972). The mood-altering impact of various drugs has also been tested (Ho et. al., 1978).

## Psychophysiology

This tradition in the study of emotion can be traced back to the James-Lange theory (discussed above). As the label "psychophysiology" indicates, researchers have focused on the relationship between emotions as subjective feelings in the mind and the physiological states of arousal observed in the body.

In recent years, researchers in this discipline have been particularly interested in arousal- and feedback-mechanisms. Others (e.g. Izard and Buecler, 1980) have developed total models where the emotions are included as sub-systems.

## Personality science

Several researchers have focused on the relationship between personality traits and emotions. Smith (1961) found traits like optimism, warmth, emotional stability, sociability and self-insight to be positively correlated with measures of happiness. Wessman and Ricks' (1966) conclusion was similar. They concluded that characteristically happier people are well-adjusted, score high in ego strength, and high in self-esteem, as well as being socially involved.

For negative emotions, Veroff et. al. (1962) reported worry, anxiety, and psychosomatic concerns among the correlates of unhappiness. Similar results were obtained by Bradburn and Caplovitz (1965).

The above-mentioned studies have all concentrated on what Wessman and Ricks (1966) call the hedonic level[1]. Other studies (see e.g. Diener et. al., 1985) have focused on the intensity dimension of emotion. Larsen (1984) for example, found that personality traits like activity level, sociability, and arousability correlate with measures of emotional intensity.

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[1]Hedonic level is defined as the amount of positive emotion vs. negative emotion, and is also called the happy-sad dimension of emotion.

## Psychometrics

Some of the mood related research has been devoted to measurement problems. Nowlis (1961, 1965) and Nowlis and Green (1957, 1964) have put down considerable amounts of work in designing instruments for measuring mood levels. Cantril (1965) in his life satisfaction-study, used a so-called self-anchoring scale, in which individuals defined a "best life" and a "worst life" for themselves, and then rated their present life on this best-to-worst scale. Bradburn (1969) developed separate scales for negative and positive affect. Following the old idea that happiness is the sum of pleasures minus pains, Bradburn constructed the Affect Balance Scale by subtracting negative affects experienced during the past two weeks from positive affects.

Other researchers have worked with the structure of various emotional terms. Clore et. al. (1987) and Storm and Storm (1987) have constructed taxonomies of different emotions. Others, (Russel, 1980; Plutchik, 1980b; Fisher et. al., 1985) have worked with so-called circumplex models of affect. In these models, several hundreds of everyday mood-terms are first reduced to a smaller number of core dimensions, and then ordered along a circle such that dimensions that are closer together on the circle are more similar than those that are farther apart.

## Cognitive psychology

Until the last two decades, cognitive psychologists were not particularly interested in moods and emotions. Cognitive science has, according to Mayer (1986), been dominated by the study of formal systems such as propositional logic and reasoning. Emotions and mood are different in the way that no formal system or symbolic representation has ever been developed for their manipulation.

Since the late sixties/early seventies however, a growing body of literature now indicates that affective states, can influence thoughts, cognitive processing, and social behavior in some rather remarkable ways (Isen, 1984).

The trend of mood-research in cognitive psychology, has been to treat mood as an independent variable, to determine how different mood states may affect various cognitive processes or behaviors. As most of this research is highly relevant for this study, the main findings will be presented in chapter 3.

## Consumer behavior

Only a fraction of all consumer behavior-theories has been developed within the discipline of consumer behavior. Theories are typically "borrowed" from psychology and modified from being models of general behavior to models of consumer behavior. This is particularly evident when it comes to mood related research in consumer behavior. The main contributors have typically been cognitive psychologists with a special interest in marketing problems. By applying the knowledge of mood effects on cognitive processes to the area of marketing, promising findings with regard to mood as a marketing variable have been made.

The scope of mood state related research in consumer behavior can be illustrated in the following figure:

Marketing variables ================= 

Effects on =======

Service encounters

Point-of-purchase stimuli

Communications stimuli

Mood state

Behavior

Evaluations and judgement

Recall

Effects on mood          Mood effects
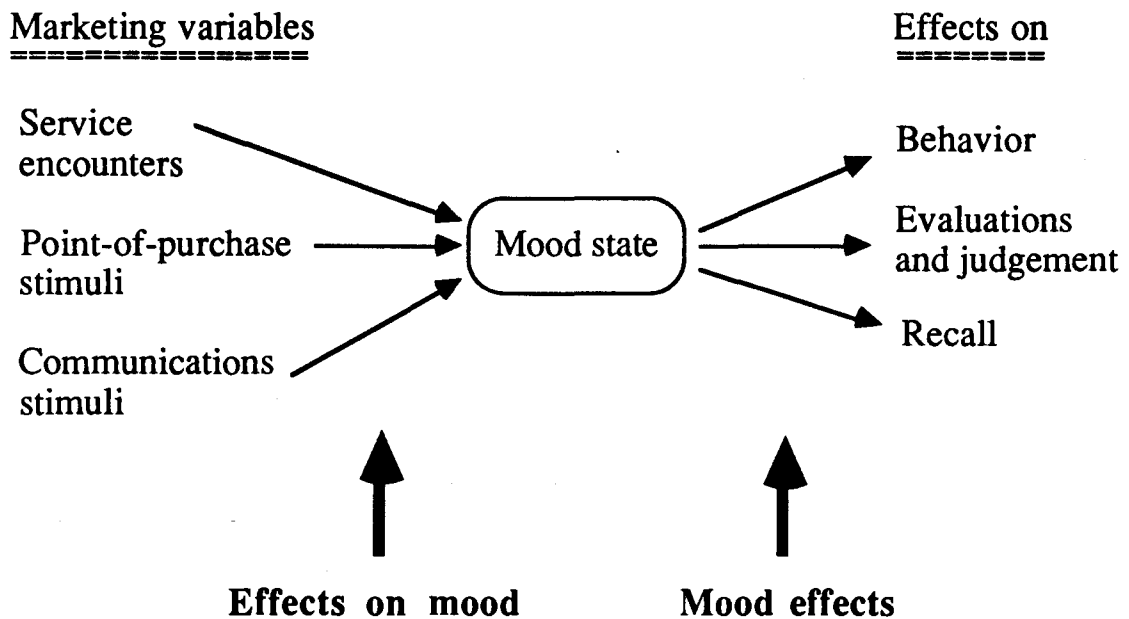
**Figure 1.1: The scope of mood related research in consumer behavior**

Research in the left side of the figure treats mood as a dependent variable. The main question in this line of research has been: What factors determine the consumer's mood state?

According to Gardner (1985) it can be useful to divide these factors into two groups:

1) Factors beyond marketers' control. In such cases, marketers need to understand the effects of these factors in order to develop appropriate strategies. For the marketer of tourist services, weather can be such a factor. Several studies have investigated the relationship between mood and weather (Cunningham, 1979; Schwarz and Clore, 1983; Troye and Somrau, 1988).

2) Factors within marketers' control. In these cases, marketing stimuli can be employed to influence consumers' moods. Gardner (1985) states that there are mainly three areas where this type of stimuli can be used:

a) Service encounters
b) Point-of-purchase stimuli
c) Communications stimuli

For the marketer, the task will be to maximize the effect of positive mood inducing factors, and minimize the effect of negative ones. For service encounters and point-of-purchase stimuli, Gardner (1985) points out that both the physical surroundings as well as procedures and interactions between customer and service-provider are crucial for positive mood induction. When it comes to communications stimuli, the content of the message as well as the context it is presented in, will determine the mood inducing effect.

As regards factors beyond the marketer's control, these will often have negative mood inducing properties. Bad weather as a threat to the marketer of tourist services, has already been mentioned. Other factors may include pollution and strikes. The task here, is to minimize the impact of the mood inducing factor, and thus try to maintain the customers' initial mood states.

On the right side of figure 1.1, we find the mood effects. In her review of findings from the psychological literature, Gardner (1985) states that mood may have direct and indirect effects on behavior, evaluations/judgements and recall. Results from this research will be presented in greater detail in chapter 3. In the final chapter of this dissertation we will discuss what implications the results from the empirical study will have for the discipline of consumer behavior.

## Survey methodology

Because mood states can affect judgement, memory and behavior, the concept of mood will also have relevance for survey methodology. In some contexts, the effects of respondents' moods on their evaluations may be viewed as a biasing factor (Gardner, 1985). Dijkstra and van der Zouwen (1987) discuss how a positive mood within the respondent may lead to more favorable evaluations and thus to a more positive reporting. Sudman (1987) points out the importance of transitory moods on responses to more general questions about life satisfaction and possibly other topics. On the empirical side, Peterson and Sauber (1983) present evidence for mood biases on evaluations and provide a measurement instrument to take them into account.

When it comes to mood effects on memory, research has indicated that memory retrieval may be affected by mood states (see chapter 3). This may lead to a bias for certain types of behavioral/factual issues, i.e. some types of behavior are over-reported, while others are under-reported. As for mood effects on behavior, studies show that people in a good mood generally are more willing to help others. In the context of survey methodology, mood effects may thus lead to a sampling-bias, because of an over-representation of people in a good mood. It is worth noticing, that survey methodology research has been primarily occupied with mood effects on evaluations, and not with potential mood biases on memory and behavior.

The present study has, in our opinion, important implications for survey methodology research, and the findings will therefore be discussed in this context in the last chapter of this dissertation.

## 1.4. Implications

We started this chapter with a presentation of the background for this dissertation. It was stated that the dissertation will be positioned at the intersection of consumer behavior and survey methodology. Secondly, the underlying research questions were discussed. The main research question for the empirical part of the dissertation, is how and when the subjects' mood states will influence on evaluations of various aspects of Norway, both individual aspects and overall evaluation. As discussed earlier, we are

particularly interested in determining the effects of combining information content and mood induction, as opposed to a pure mood induction procedure where no salient information is presented.

In the third section of chapter 1, a brief overview of how the concept of mood has been relevant for a number of research disciplines was given. The purpose of this overview has not been to deliver an extensive presentation of previous research with direct implications for this empirical study. Rather, it has been an attempt to display the "big picture" before diving into the essential details.

As mentioned previously, we will in chapters 2 to 4 concentrate on the elements of research that are particularly essential for this dissertation. In chapter 2, the focus will be on mood states. Here we will present and discuss findings from research that has treated mood as a dependent variable. The focus of chapter 3, is mood effects which means that we now are interested in mood as an independent variable. In this chapter we will give a fairly comprehensive account of reported mood effects on memory, judgements/evaluations, and behavior. In chapter 4, we will discuss the various procedures that have been employed to induce the desired mood states. The purpose of chapter 4 is thus to discuss and present the multitude of mood induction procedures, in a systematic fashion.

# *Part II*

# *THEORY*

# CHAPTER                2

# Mood states

## 2.1. Definitions and distinctions of terms

The definitions of mood in the psychological dictionaries all indicate its shifting and temporal features (Wessman and Ricks, 1966). Some researchers distinguish mood from emotions, by stating that the latter usually are more intense and full-blown (Clark and Isen, 1982). Others state that while one is nearly always aware of one's emotions and their effects, one may not be conscious of one's mood or the fact that it may color one's attentional processes and influence in decision making (Gardner, 1985). Ruckmick (1936) describes mood as follows:

> "It has no particular cognitive element. We are often at loss to say toward whom or what it is directed. By the same token it does not seize the whole of consciousness, as do full emotions or passions. It stands quietly in the corner, as it were, while the conscious parade goes on. That it has some effect on the rest of consciousness there can be no doubt. Its presence is noted; it is a silent junior partner to the mental life of the moment. But certainly there is no seizure, no tyrannical control, no obvious intrusion." (pp. 72-73).

In everyday life, we use hundreds of different words to describe mood states and emotions. Joy, happiness, sadness, anger, fear are just a few examples. Often there is no clear distinction between the terms, and the relationship between different moods is unknown. How, for instance, does joy differ from happiness, and how similar an emotion is sadness to anger? This obvious lack of clearness has lead researchers, to look for the possibility of reducing the hundreds of mood-terms we use in everyday life, into a smaller number of primary emotions. There have also been attempts to devise scales for the similarities of emotions. One of the most promising approaches, in our opinion, is Plutchik's (1980b) proposal for an emotion cycle. The cycle is presented in the figure below.
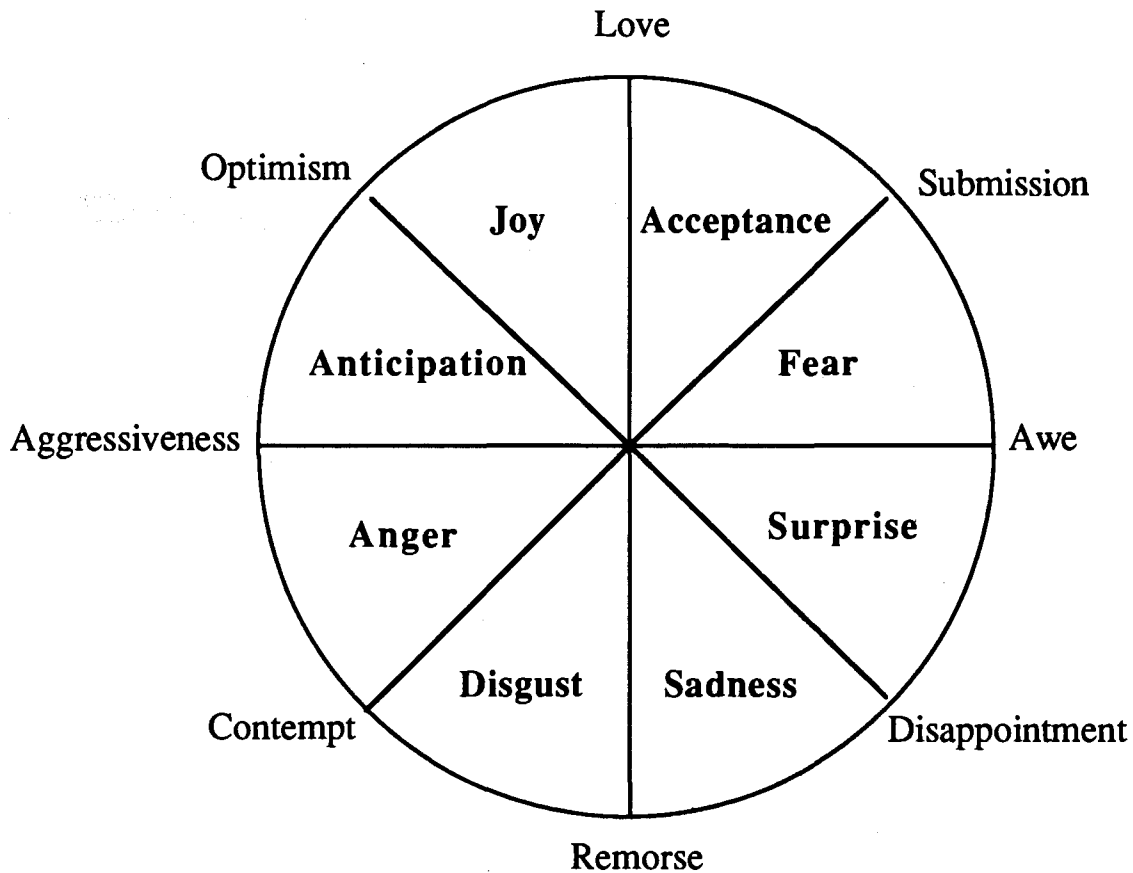
**Figure 2.1: Plutchik's emotion cycle**

Plutchik used factor analysis of similarity judgements, to reduce a great number of emotion terms into eight primary emotions. The primary emotions: Joy, acceptance, fear, surprise, sadness, disgust, anger and anticipation are shown in the inner circle. Proximity around the edge of the circle indicates the similarity of emotions. In this way diametrically opposed emotions should be farthest apart. Thus, joy and sadness are supposed to be opposites, as are anger and fear. Joy is supposed to be closer to anger or fear than to sadness, just as anger is closer to sadness than to fear. According to Plutchik (1980b) the primary emotions can be mixed to create other emotions. By mixing joy and acceptance, love is established, just as disappointment will be the result of a mix between surprise and sadness.

## 2.2. Properties of mood states

While Plutchik has focused on the similarities of different emotions, other researchers have been interested in the special properties of mood-states. A few of these properties are presented below.

### 1) Mood perpetuation

According to Bower (1981) there is often a tendency for a dominant emotion to persist. Bower states:

> *"Thus, a person in a depressed mood will tend to recall only unpleasant events and to project a bleak interpretation onto the common events of life, and these depressing memories and interpretations feed back to intensify and prolong the depressed mood. Thus, the vicious circle of depression spirals." (p. 145).*

But this effect is not limited to the happiness-depression dimension of mood. According to Bower (1981) similar mood-circles can occur with mood states like anxiety and worry. Worrywarts, hypochondriacs and chronically overprotective parents are examples of people who are trapped in worry-circles.

### 2) Self control of moods

Luckily, there are ways to break a circle of less favorable moods. Bower (1981) mentions activities like watching TV, reading a good novel and whistling past the graveyard as techniques for controlling one's thoughts and moods. These techniques can be switched on when a negative mood arises, and thereby prevent the bad mood from being introduced or break a circle of negative moods that has already started.

### 3) Prolonging pleasurable mood states

But, not only are there means for breaking or preventing a negative mood, there are also techniques for prolonging favorable ones (Bower, 1981). For instance, after receiving good news or winning a prize, it is very common to go out and celebrate with friends. Such a celebration can be an efficient way of prolonging the positive mood, already initiated by the good news.

4) Unawareness/unwillingness to see the effects of one's mood

Common knowledge and research agree that a person's present mood may influence on the judgements he or she makes. This may apply even in instances where the mood state was initialized by factors that are unrelated to the topic of which the judgement is being made (Gardner, 1985).

In other words, it is not wise to ask your boss for a pay-raise if you know that he had a fight with his wife, earlier that day. The boss, on the other hand may not be aware (or at least not willing to admit) that this incident may affect his judgement, because it is unrelated to the decision concerning your salary. This example illustrates the seeming paradox, that we are often aware that other's judgements may be biased by their mood-state, but we are unable or at least unwilling to admit that this bias also can apply to our own judgements.

## 2.3. Intraindividual and interindividual differences in mood

Several researchers have been interested in the structure of mood and psychological well-being. In some studies the focus has been on mood changes within persons over time, while other studies have compared mood across individuals. We can thus say that both intraindividual and interindividual differences in mood, have received attention.

Until the mid-sixties, most researchers conceptualized affect as a single bipolar dimension, with "positive" and "negative" as end-points (Diener et. al., 1985). Then in 1966, Wessman and Ricks, in a study of daily mood fluctuations, reported two independent dimensions of affect: (a) the amount of positive versus negative emotion, which they called average hedonic level, and (b) the amount of variability a person exhibited in his or her affect.

Bradburn (1969) made the next important contribution. Based on data from several national samples, he found that positive and negative affect, when measured separately, varied independently, i.e. the amount of positive affect a person felt did not substantially correlate with the amount of negative affect he or she experienced. Researchers (e.g. Zevon and Tellegen, 1982; Diener and Emmons, 1984) have later replicated Bradburn's findings.

It seems, then, to be a paradox. On one hand it is obvious through everyday observation that positive and negative affect at a given moment in time are inversely related. In other words, when a person is in a good mood, he or she is not likely to be simultaneously in a bad mood. Other researchers (e.g. Russel, 1980) argue in a similar manner, that the more a person experiences pleasant emotions, the less time is available to experience negative ones, and argue that there should be a strong negative correlation between negative and positive moods. On the other hand Bradburn (1969) and the other studies mentioned above, find no correlation between the two, i.e. they vary independently.

Diener et. al. (1985) offer an explanation to this paradox in their frequency-intensity model. In the model the two dimensions of affect are separated. The frequency dimension, corresponds to Wessman and Rick's (1966) average hedonic level (discussed above). In Diener et. al.'s (1985) study this dimension is the amount of time in which positive affect predominates over negative affect. For the frequency dimension, a negative correlation between positive and negative affect was observed.

By looking at the other dimension, called the intensity dimension, isolated, Diener et. al. (1985) found a positive correlation between positive and negative affect. That is, the person who experiences strong positive emotion is the person who at another time experiences intensely strong negative affect. Over time, the inverse relationship in the frequency dimension will thus be balanced by the positive correlation for affect-intensity. The net result will be no correlation between positive and negative affect. These findings accentuate the importance of treating mood and affect as bi-dimensional constructs.

Several researchers have examined the relationships between positive and negative affect and other variables. Wessman and Ricks (1966) in their study of male students, found that happy men (high average hedonic level) generally showed ego-strength and a gratifying sense of identity. There was excellent organization and purpose in their lives, together with the necessary mastery of themselves and interpersonal situations to attain their goals. The unhappy men were more pessimistic, showed poorer ego-integration and felt inferior in their academic performance.

Along the variability dimension, the stable men were usually objective, cautious, rational and they had poor imagination. The variable men were more lively, carried along by their own impulses with little critical control. They were also more willing to admit feelings, than the stable men were. Wessman and Ricks (1966) state that repression of feeling therefore seems to be an important safeguard of mood stability.

Costa and McCrae (1980) reported that one set of personality traits influences positive affect, whereas a different set influences negative affect. They argue that extraversion will only have an impact on positive affect, while the impact of neuroticism will be limited to negative affect. Emmons and Diener (1986) went a step further. By splitting extraversion (as measured by the Eysenck Personality Inventory, Eysenck and Eysenck, 1964) in its two components, impulsivity and sociability, they found that only sociability was strongly related to positive affect, whereas impulsivity tended to correlate more with negative affect. According to Emmons and Diener (1986) sociability may have an impact on positive affect, because highly sociable people are more likely to interact with other people. Reviewers of the subjective well-being literature (Diener, 1984; Wilson, 1967) have consistently found that social variables such as social activity, social contact, and social interest are related to subjective well-being. The impulsive individual, with a tendency to say the first thing that comes to mind, and who often does not consider the consequences of their actions, could potentially be quite unhappy, and this may be an explanation for the correlation between negative affect and impulsivity.

Diener et. al. (1985) have focused on age and sex effects for the intensity dimension of affect. They found that women and persons under age 29, seem to be more emotionally intense than older people and men. According to Diener et. al. (1985) there may be various reasons for these differences. The first explanation proposed by Diener et. al. (1985) has to do with biological differences. Here the age effect is explained by the finding that young persons seem to have greater levels of autonomic arousal. Another possibility has to do with cultural expectations. It may be that older persons and men are expected to be more "mature" and less emotional, and may thus dampen their emotional responses in various ways. A third possible explanation may be differences in life events. For example, young people may be exposed to more fun events, as well as being subjected to more stressful ones. Finally, Diener et. al. (1985) point out two additional factors that may explain the observed effect of age. The first one has to do with adaptation or habituation. As people grow older, they will have been exposed to more emotional incidents. Indeed, they will have experienced repeated exposure to many of them. Thus, they will be likely to be habituated to more of the

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emotional events in their lives and therefore experience less intense affect. The second explanation for the age trend, could be historical cohort effects. That is, persons living in certain historical periods may experience less intense effects. Diener et. al. (1985) speculate that given the continual decline in emotional intensity of a 40-year period of adulthood, historical factors could be responsible for the negative correlation between age and emotional intensity.

Several researchers have studied the relationship between daily life events and self-reported mood. Larsen et. al. (1986) found that high affect-intensity subjects, (as measured by the Affect Intensity Measure, Larsen, 1984) responded to both actual and hypothetical life events with stronger or more intense affective reactions. Stone and Neale (1984) studied the effect of severe daily events on mood and concluded that although these events had a momentary effect on reported mood, there was no evidence that this effect was enduring. The subjects' moods on the day following the severe event were neither more negative nor less positive compared with moods on days not selected for events.

Clark and Watson (1988) examined their subjects' daily mood ratings and corresponding diary entries to determine relations between common events and the two independent mood factors, positive affect and negative affect. They found that social events, i.e. activities that were either social by definition (e.g. a date) or else included an explicit mention of another person, had the strongest relationship to mood of all the categories analyzed. As previous research has shown, the correlation was almost entirely limited to positive affect. Contrary to Clark and Watson's (1988) expectations, there were no indications that the day of the week had any effects on mood. Nor where there any evidence that weather had any impact. Daily hassles like losing an object, missing a bus etc. were important determinants for negative affect, but not for positive.

The impact of stressors on mood, have been investigated in several studies. Eckenrode (1984) focused on three different types of stressors: (a) Acute and major undesirable life events, (b) Chronic stressful conditions, and (c) Minor daily stressors. Among the three types, only the relatively minor daily stressors assumed primary causal significance. The effects of chronic stressors and previous life events were mediated by changes in daily events and previous levels of psychological well-being. Folkman and Lazarus (1988) found that the way people coped with the demands of stressful encounters, was an important determinant for the effect of stressors. In other words, coping was found to be a mediator in the relationship between stressors and mood.

Scheier and Carver (1985) have suggested that dispositional optimism may have implications for the manner in which people deal with stressful encounters. A study of postpartum depression, by Carver and Gaines (1987) showed that optimism was associated with lower levels of depression after delivery, even after partialling out the earlier levels of depression. In another study (Scheier and Carver, 1985), college undergraduates were asked to complete a measure of dispositional optimism and a checklist of physical complaints at two different times, presumably marking a particularly stressful period in the students' lives. An inverse association between optimism and physical complaints-reporting was found, which remained significant even when initial symptom levels were partialed out.

It seems that optimists and pessimists spontaneously employ different coping strategies when confronted by stressful situations (Scheier et. al., 1986). Optimists generally use an active coping strategy, where seeking social support and emphasizing positive aspects of the stressful situation are important ingredients. Pessimism on the other hand, seems to be associated with denial and distancing, with focusing on stressful feelings, and with disengagement from the goal with which the stressor is interfering.

Others (Lefcourt et. al., 1981) have pointed out that locus of control may serve as a modifier in the relationship between stressors and mood. Locus of control refers to the beliefs that individuals hold regarding the ways in which given outcomes occur, and the construct has been thought to be one of the more potentially important personality variables. Another study by Metalsky et. al. (1982) argues that attributional style may determine an individual's vulnerability to depressive mood reactions. It was found that students who typically attribute negative outcomes to internal or global factors experienced a depressive mood response when confronted with a low midterm grade, whereas students with an external or specific attributional style for negative outcomes were invulnerable to this depressive mood response.

## 2.4. Implications

The focus in this chapter has been on mood states. We started the chapter with definitions and distinctions of terms. It was emphasized that mood is usually distinguished from emotions, by stating that the latter are more intense and full-blown. The relationship between various types of emotions was discussed, and four properties of mood states were also presented. The main part of the chapter was a discussion of intraindividual and interindividual differences in mood. Here, the importance of treating mood as a bi-dimensional concept was emphasized. Research has clearly shown that there is no strong correlation between positive- and negative-affect. This finding may be explained by separating mood into two dimensions; the happy-sad dimension and the variability dimension. How the two dimensions correlate with various personality traits was also discussed. This discussion can be summarized in the following figure.

High affect intensity

Lively
Impulsive
Little critical control
Women are more affect intensive
Young people are more affect intensive

Negative affect

Pessimism
Poor ego-integration
Feeling of inferiority
Neuroticism
Impulsivity

Positive affect

Ego-strength
Sociability
Gratifying sense of identity
Excellent organization of life
Control of themselves and inter-
personal situations

Low affect intensity

Objective
Cautious
Bleak imagination
Less willing to admit feelings
Men are less affect intensive
Older people are less affect intensive

**Figure 2.2: The two dimensions of mood and correlated personality traits**

In the figure, the two dimensions of mood are shown together with personality traits that usually characterize the four end-points. An interesting issue is the relationship between affect intensity and observed strengths of emotions. The relationship is illustrated in the figure below.

## Affect intensity

|  | **High** | **Low** |
|---|---|---|

(figure: a 2×2 grid with vertical axis labelled "Strength of observed emotion" (High / Low) and horizontal axis "Affect intensity" (High / Low), with a diagonal arrow running from the upper-left quadrant to the lower-right quadrant)
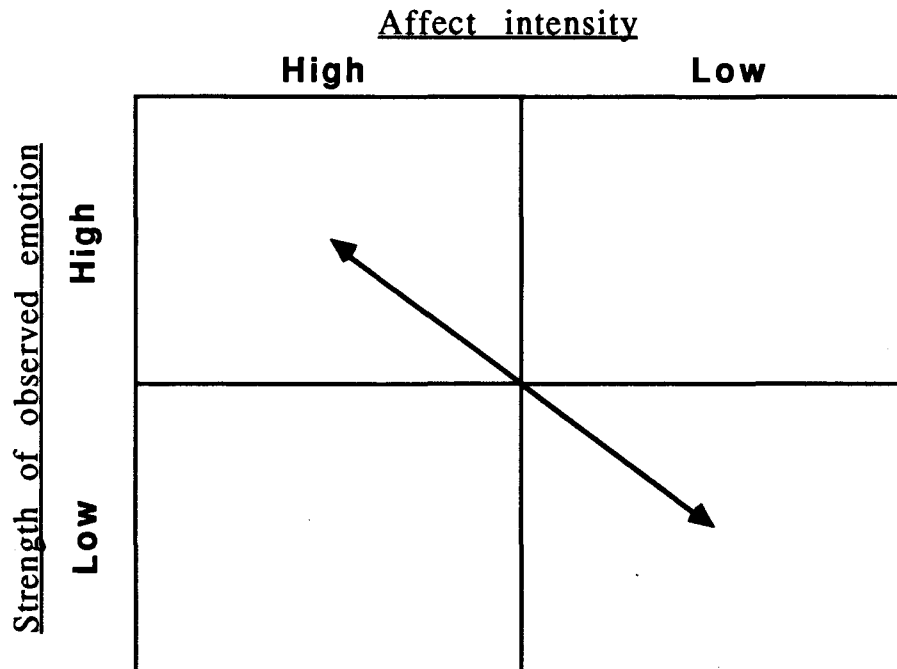
**Figure 2.3: The relationship between affect intensity and strength of observed emotions**

It is likely that for most topics, the majority of observations will be along the diagonal indicated by the arrow. In other words we can expect that people who are very affect intensive generally will experience stronger emotions than those who are less affect intensive. There are however other variables that may have an effect. If the issue under observation, for example, is emotions evoked by a film depicting experiments on animals, previous engagement will probably be important. In other words, it is likely that a low affect intensity person who is very engaged in the animal-rights issue will experience stronger emotions than a high affect intensity individual without this previous engagement. Although the majority of observations will probably be along the high-high, low-low diagonal, the above-mentioned example should illustrate the possibility of other combinations occuring.

As we shall see in chapter 5, mood state will be one of the components in the research model that constitutes the basis for the empirical part of this dissertation. Much of the discussion in chapter 2, has no direct relevance for this empirical study, and can thus be viewed as background information. This is particularly the case for research concerning the relationship between mood and various personality traits. The most important part of chapter 2 is, in our opinion, the independence between positive and negative affect. This independence implies that it is not meaningful to treat mood as a single bipolar dimension. As we shall see in chapter 6, this will have implications for how the mood measure used in the empirical part is constructed.

# CHAPTER 3

# Mood effects

In this chapter we will look into previous research that has treated mood as an independent variable. We begin by focusing on how mood can influence memory, i.e. how elements of memory like learning, retention, and recall of information may be dependent on mood. The next step will be to see how mood may interfere in judgements and evaluations, while the last part will be a discussion on how mood may influence behavior.

## 3.1. Mood effects on memory

### Effects on learning and retention

According to Mayer (1986), there seems to be an asymmetry between positive and negative material when it comes to learning. This asymmetry can be stated in the following hypothesis:

---

**The Selective Learning Hypothesis**

Words or concepts with a positive valence will be learned more easily than similar words with different valences.

---

But not only will it be easier for the individual to learn information with positive valence, as time passes this information will have a higher probability to be retained in memory. The hypothesis above can thus be extended to also include memory retention:

---

**The Selective Retention Hypothesis**

Words or concepts with a positive valence will be better retained than similar words with different valences.

---

Several theories give support to the above-mentioned hypotheses. Freud's (1923/1961) theory of repression predicts that negative words will be both learned and

remembered less well than other words, because such negative words are ego-threatening. The same predictions can also be generated from the Pollyanna theory (Matlin and Stang, 1978). This theory states that there will be a bias towards the positive within a number of different domains, including selective perception, learning, memory, and language.

Although the theoretical support for both the selective learning and the selective retention hypotheses seems to be solid, the picture is less clear when it comes to empirical findings. According to Mayer (1986) the hypotheses have been tested in more than a hundred studies, but the conclusions are conflicting. At different times, almost every word valence (negative, neutral, and positive) has been found to account for superior learning. Some of the conflicting results may be due to confounding with other characteristics of language, e.g. the frequency with which the word appears, the level of abstractedness and the word's meaningfulness. Our conclusion when it comes to the selective learning/retention hypotheses, must thus be that even though the hypotheses seem to be well-founded in theory, the empirical support seems to be lacking.

Several researchers have tried to manipulate their subjects' mood to investigate how different mood states may influence learning. Some (e.g. Bower and Mayer, 1985; Leight and Ellis, 1981) have found that a good mood enhances the learning process. These findings can be formulated in the following hypothesis:

---

**The Differential Learning Hypothesis**
People learn more material when they are in a good mood than they do when they are in a bad mood.

---

Mayer (1986) explains the findings by stating:

*"It is thought that depression will inhibit learning by decreasing motivation or by uncontrollably interjecting negative thoughts into consciousness and thereby diverting attention from the learning process." (p. 298)*

However, several studies have found no support for the differential learning hypothesis. In several studies using hypnosis as mood induction procedure (Bower and Mayer, 1985; Bower et. al., 1978) or naturally occurring mood (Hasher et. al., 1985), no significant mood effects on learning were found. According to Mayer

(1986) the differential learning effect appears to be weak, but occasional among normal people who are experiencing moderately strong moods. If the mood intensity is increased, there may be stronger effects.

Several researchers have manipulated both subjects' mood states and the valence of the learning material. Their findings point to the following hypothesis:

> **The Mood-Congruent Learning Hypothesis**
> Stimuli will be better learned if their valence matches the learner's mood.

The hypothesis has been substantiated in a number of different studies. Bower (1981) induced mood by the means of posthypnotic suggestion, and found that people in a sad mood were inclined to put emphasis on sad things. After either sad or happy mood was induced, the subjects were asked to read a story about two men, one happy and one sad. The next day, while being in a neutral mood, the subjects were asked to recall details about the story. Bower (1981) found that subjects who had read the story in a sad mood would identify with the sad character in the story and recall more about that character. The subjects who read the story in a good mood, reported the opposite. They found the happy character to be the central person in the story, and consequently they could easier identify and remember details about the happy character.

In a further elaboration of this study, Bower et. al. (1981) changed the story, so that both persons in the story, were associated with happy and sad events. This study showed that subjects in the happy mood condition remembered happy events better than sad events, and those in the sad mood remembered sad events, regardless of the persons with which the events were associated.

The mood-congruent learning hypothesis has later been bolstered by a number of other studies, using a variety of different mood induction procedures (see e.g. Teasdale and Taylor, 1981; Teasdale and Russell, 1983; Nashby and Yando, 1982; Gilligan, 1982; Gilligan and Bower, 1983; Mauro, 1984; Bower and Mayer 1985). However, there are also studies where mood-congruent learning has not occurred. Bower et. al. (1978), Isen et. al. (1978) and Kelly (1982) found no support for the mood-congruent learning hypothesis in their studies.

According to Mayer (1986) the mood-congruent learning hypothesis seems to have gained more support in studies of clinical groups than is the case when the subjects represent the normal population. This has led to speculations that the effect among normals is entirely caused by experimenter demand; i.e. the subjects figure out what results the experimenter wants and proceeds to behave in that manner (Hasher et. al., 1985). Mayer (1986) however argues that the mood-congruent learning effect is real, but detectable only for intense mood levels. The real reason for the absence of mood-congruent learning effects in some of the studies using non-clinical subjects, may thus not prove that the effect does not exist, but rather that the mood induction procedures employed have not been able to produce sufficiently powerful mood changes in the subjects.

How can we explain mood-congruent learning effects?

Bower (1981) offers three complementary explanations. The first possible explanation is that subjects elaborate more on mood-congruous material. The second is that material that matches the learner's mood may remind him/her of a previous event in his/her own life, which makes the learning material more salient. The third explanation is that mood-congruous material causes a more intense emotional reaction than is the case if the material is incongruent.

This last explanation is illustrated in the figure below:
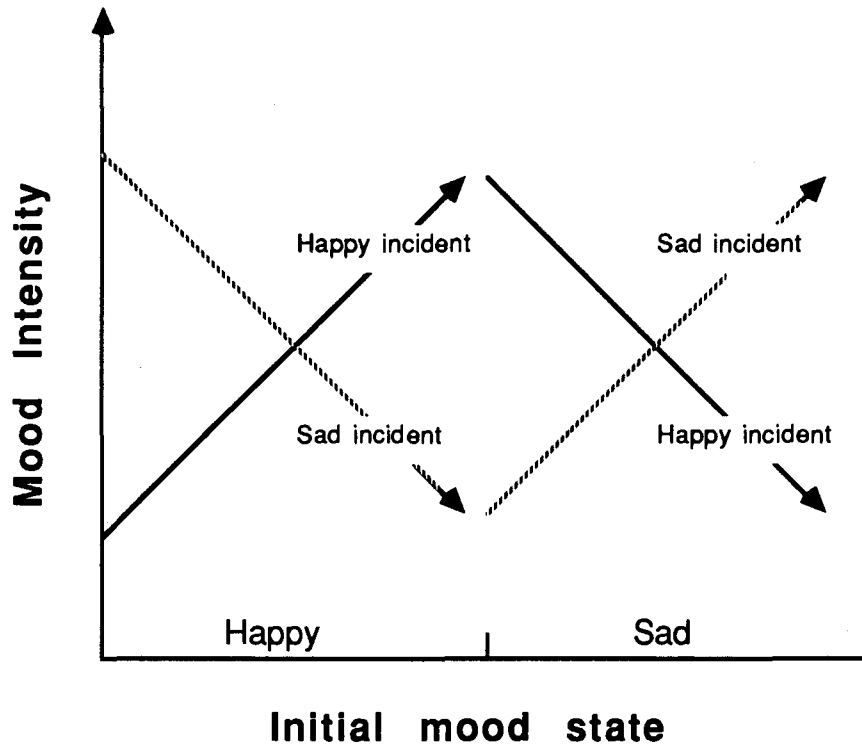
**Figure 3.1: A mood-intensity explanation of mood-congruent learning**

The idea is that mood-incongruent material decreases the mood intensity, while the opposite will be true for mood-congruent stimuli. Bower (1981) states:

*"Thus, happy subjects would come down from their euphoria somewhat when they read about a funeral or unjust suffering, whereas these topics would intensify sad subjects' feelings." (p. 144).*

If it is true that mood-congruent material will increase the person's mood intensity there are at least two reasons why this should enhance learning (Bower, 1981). In real life, events that evoke strong important reactions are typically events involving personally significant goals. Thus, strong emotion is usually equated with importance. The other reason, is that really intense emotional experiences tend to be rare, and therefore are remembered because of their distinctiveness.

Forgas and Bower (1987) measured the time that their mood-induced subjects spent on reading differently valenced stimuli. The study showed that the subjects spent longer time learning about mood-congruent details, than they did when the material was incongruent. While this result clearly confirms that mood-congruent material receives more attention, it does not determine which (if any) of the three explanations (elaboration, reminding, and intensity) is the most dominant.

## Effects on memory retrieval

Most studies on retrieval have typically had their subjects learn both pleasant and unpleasant valenced stimuli in a neutral mood, and later after being entered into either a positive or negative mood, asked to recall the stimuli. Just as with learning, mood-congruency is usually hypothesized:

---

**The Mood-Congruent Retrieval Hypothesis**
Memory retrieval is enhanced for stimuli with a valence that agrees with the retriever's mood.

---

In other words, the hypothesis states that people in a positive retrieval mood, will tend to recall the positively valenced stimuli, while the opposite will be the case for people in a negative mood. According to Isen (1984) mood will serve as a retrieval cue for mood-congruent material in memory. In other words, when we are in a good mood, happy events rather than sad ones seem to come in mind.

There are several studies that support the mood-congruent retrieval hypothesis. Isen et. al. (1978) exposed subjects to a list of positively and negatively valenced words, then asked them to recall the words after mood was induced by a success or failure experience. Words that were consistent in valence with subjects' emotional state were recalled more frequently than were inconsistent words. Laird et. al. (1982) and Riskind (1983) manipulated subjects' facial expressions, by making them frown or smile, and found that for those subjects who reported mood-change, memory was better when the material to be recalled was affectively consistent with the mood state implied by the facial expression. For the subjects that reported no mood change, the facial expressions did not affect recall.

There are, however, several studies that reject the mood-congruent retrieval hypothesis. In two studies, Mayer and Bremer (1985) and Mayer and Volanth (1985), subjects were asked to give free associations to words after mood had been induced. Afterwards the word-associations were examined for mood-congruity. In neither of the studies were there any majority of congruent associations. The same studies also tried using naturally occurring moods, but the results came out the same: No mood-congruency.

In a study by Clark and Waddell (1983) receiving either positive, negative or no feedback on a bogus test, was used as a mood induction procedure. After induction, the subjects were asked to respond to descriptions of three situations with whatever thoughts that came to mind first. Although the majority of reactions were in the hypothesized direction, the mood-congruent effect was inconclusive for positive mood and not significant for negative. In another study (Clark et. al.,1983) no mood-congruent effect was found at all. Srull (1983a) used self-generated thoughts (either happy or sad) to induce mood and found that subjects recalled more attribute information that was incongruent with their retrieval conditions, than material that was congruent.

The ambiguous empirical results have lead Mayer (1986) to conclude that no known experimental procedure or method has been adequate to consistently produce mood-congruent retrieval effects. The empirical support for the mood-congruent retrieval hypothesis is thus highly inconclusive.

## Learning and retrieval combined

Several studies have focused on both learning and retrieval in relation to mood. The dominant hypothesis in this line of research seems to be:

---

The Mood State Dependent Retrieval Hypothesis

Material will be recalled better to the degree that moods during learning and recall are similar.

---

Note that this hypothesis is different from both the mood-congruent learning and retrieval hypothesis, in the sense that it places no importance on the valence of the learning/retrieval material. As discussed above the mood-congruent learning hypothesis states that stimuli with a positive valence will be learned more efficiently when in a good mood, and vice-versa when in a bad mood. The mood-congruent retrieval hypothesis claims the same for retrieval of valenced material. For the mood state dependent retrieval hypothesis, however, the valence of the learning and retrieval material is arbitrary. What is important is a match in mood states at time of learning and recall. In other words, the hypothesis predicts that an association is formed between mood-at-learning and mood-at-recall, and this association helps to cue the stimulus associated with the learning mood (Mayer, 1986).

The dominant theory for explaining the hypothesis seems to be Bower's (1981) network theory of state-dependent retrieval. In this theory, each distinctive mood state has its own node or active site in memory. When material is first learned, it is associated with the mood it is learned in. When that mood is re-experienced, the mood spreads activations to the stimuli which had earlier been learned in the same mood.

Studies of mood state dependent retrieval fall into two groups. The first group uses an experimental setting for both learning- and recall. After a particular mood state has been induced, the subjects are typically asked to learn a list of words or other types of learning material. Later, the subjects are put in the same or a different mood state and asked to recall the learning material. If the number of correct recall is higher when there is a match between learning- and recall mood than when there is a mis-match, then the mood state dependent retrieval hypothesis is supported.

The first study to report mood state dependent retrieval in this type of setting was Bower et. al. (1978). In this study, mood was induced by post-hypnotic suggestions, and the subjects were asked to recall two lists of words. Although the results supported the hypothesis, mood state dependent recall only occurred when no other cues for recall were given. For instance if the words to be recalled were "dying dog", and the word "dying" was given as a cue, a match between learning mood and retrieval mood would have no effect on recall. This finding can be interpreted that the association between mood state and learning material can be a cue for memory retrieval, but only in cases were stronger cues are absent.

The findings were replicated by Bartlett and Santrock (1979) using children as subjects. Mood induction, either happy or sad, was achieved by a combination of story telling and experimenter behavior. The results indicated support for the the mood state dependent retrieval hypothesis for free recall tasks. When additional recall cues were given, such as in recognition- and cued recall-tasks, the importance of matching learning and recall mood was nullified.

The second group of studies, uses both naturally occurring (i.e. not induced by the experimenter) learning and retrieval mood or a combination of naturally occurring learning mood and experimentally induced retrieval mood. Riskind et. al. (1982), Snyder and White (1982), Teasdale and Fogarty (1979), and Teasdale and Taylor (1981) used the Velten Mood Induction Procedure, and then asked their subjects to recall previous life experiences. In each study, memories congruent with the induced mood state, were more accessible. Bower (1981) and Natale and Hantas (1982) tested

the same dependent variable, by using hypnosis as mood induction procedure, and found that recall of previous life experiences were consistent with the mood state dependent retrieval hypothesis. Finally, Clark and Teasdale (1982) and Lloyd and Lishman (1975) found that naturally occurring depression also increased the accessibility of memories that were consistent with the retrieval mood.

Isen et. al. (1978) induced positive mood by giving the subjects a small gift. They found that this condition, as opposed to a control group that did not receive any gift, was associated with an increased ability to recall positive material about products the subjects owed. In this study one must assume that the subjects' positive experiences with their products (learning), occurred in a happy mood state, so that the findings point to support of the mood state dependent hypothesis, rather than the mood-congruent recall hypothesis.

All the above-mentioned studies endorse the mood state dependent retrieval hypothesis. However, recent studies, especially where both learning and retrieval moods were experimentally induced, have failed to replicate earlier findings. Bower and Mayer (1985), Ellis (1983), and Wetzler (1985) reported little support for the hypothesis. Other studies (Bartlett et. al.,1982; Goerss and Miller, 1982; Share et. al., 1984) found only mixed results, i.e. some of their results supported the mood state dependent retrieval hypothesis while other results pointed to rejection.

The original impression of very strong support for the mood state dependent retrieval hypothesis, at least when stronger recall cues were absent, thus seems to have been modified by the recent years' contradictory findings.

## Asymmetry of positive and negative moods in effects on memory

A growing body of literature suggests that while positive affect tends to facilitate the recall of positive material in memory, the opposite will not always be true for negative moods. In other words, there seems to be an asymmetric effect of positive and negative moods.

After reviewing a great number of studies, Isen (1985) points out that a large number of studies found mood-congruent results for positive moods, but not for negative. This asymmetry was present in both studies of learning and retrieval isolated or combined.

Isen (1985) points out that the asymmetric results occur independently of mood induction procedure, and argues that methodological aspects do not seem sufficient for explaining the asymmetry.

According to Isen (1985) there may be both a motivational and a cognitive interpretation of the asymmetric effects of positive and negative moods. The motivational explanation is that of positive-affect maintenance and negative-affect repair. In other words, people try to retain good feelings, but try to chase "the blues" away.

The fact that asymmetrical results rarely are found when hypnosis is used as mood induction procedure or when clinically depressed people are used as subjects strengthens the motivational hypothesis. This is because hypnotized subjects are instructed to maintain their induced affective states, and this prevents them from engaging in mood repair. When it comes to clinical depression, very few sufferers are able to break out just by using will-power, and this makes mood-repair virtually impossible.

In addition to a motivational explanation, Isen (1985) also offers a cognitive interpretation. According to this interpretation, cognitive material associated with negative affect may be structured differently from that associated with positive affect. For example, depressing material may come to be less well elaborated and interconnected in the cognitive system than positive. There is some evidence consistent with this possibility in the word-association literature, which suggests that the pool of associates to negative words is relatively small and that such associates are given with greater latency (e.g. Cramer, 1968; Pollio, 1964).

## 3.2. Mood effects on judgements and evaluations

Several studies have focused on the relationship between mood states and judgements/evaluations. The dominant proposition in this line of research seems to be:

> The Mood-Biased Judgement Hypothesis:
> Negative moods will bias judgements towards the negative and unfavorable, whereas good moods will tend to yield positive and favorable judgements.

There seems to be three different theoretical explanations for the hypothesis. The first explanation views judgement effects as secondary to memory effects. As we have seen

in the previous section, there are reasons to believe that mood may serve as a retrieval cue for information stored in memory. Mood-congruent material will thus be more accessible, when the person in a particular mood is about to make a judgement or an evaluation. Previous research by Tversky and Kahneman (1973) has shown that people often will rely on an availability heuristic when making judgements. This means that people will be biased towards using any cognitive material that is available instead of performing an extensive search in memory. If it is true that mood states make mood-congruent information more accessible and the evaluation is performed using an availability heuristic, the result may very well be a biased judgement in accordance with the mood-biased judgement hypothesis.

The second explanation for the mood-biased judgement hypothesis, is that mood states may have informative and directive functions (Wyer and Carlston, 1979; Schwarz and Clore, 1983). The informative function implies that individuals simplify the judgement task by using their perceived affective reactions as relevant information. Schwarz and Clore (1988) explain the informative function as follows:

> "Rather than computing a judgement on the basis of recalled features of the target, individuals may therefore ask themselves "How do I feel about it?" In doing so, they may mistake feelings due to a pre-existing state as a reaction to the target stimulus, resulting in more positive evaluations under pleasant than under unpleasant moods." (pp. 46-47).

An important difference between the two explanations is that of information salience. If mood states merely act as retrieval cues, as proposed by the first explanation, the evaluations should depend only on the evaluative information retrieved from memory rather than on information provided by the mood state itself. Therefore, the first explanation predicts that manipulations of the informational value of the affective state will not influence its impact on evaluative judgments. In other words, whether the mood inducing factor is relevant for the judgement task or not, becomes unimportant.

For the second explanation concerning the informative function of mood states, the aspect of information salience will be of extreme importance. If individuals attribute their current feelings to a source that is irrelevant to the evaluation of the target stimulus, the informational value of their affective states will be discredited, and their feelings should not influence the evaluative judgement.

The information function-explanation has gained empirical support in studies by Schwarz and Clore (1983) and Schwarz et. al. (1985). In these studies, mood effects were not obtained when respondents were induced to attribute their current mood to a transient external source.

The issue of information salience is a very important one, and will be discussed in greater detail later in this dissertation. In the experiments, the informative function of mood states will be tested empirically.

Mood states may also have directive functions in that they direct one's attention to specific classes of information in an attempt to sort out the plausible causes for such feelings. According to Schwarz and Clore (1983) people are more motivated to seek explanations for negative than for positive moods, because most people experience negative moods as deviating from their usually positive feelings. Schwarz and Clore's (1983) study indicates that there is a tendency to attribute bad moods, but not good moods, to external sources, and this can contribute to explain the asymmetric evaluation biases that have often been encountered in studies. In other words, people do not seek explanations for their good moods and are therefore sensitive to mood biases. People in a bad mood, on the other hand, are directed to seek explanations for their mood states, and if they find that the mood induction factor is irrelevant for the judgement task, a mood-biased judgement is avoided.

A third possible explanation for the mood-biased judgement hypothesis is that category boundary lines for the assignment of an evaluation are shifted with mood (Mayer, 1986). In other words, the evaluation-criteria may be more liberal when the evaluator is in a good mood. For example if a car owner in a good mood is asked about his overall evaluation of the car he is driving, he may consider poor rust-protection or high gas-mileage as trivial problems, and respond that his overall evaluation of the car is good. In contrast, a sad car-owner may view the same problems with great concern and thus give a very negative overall evaluation.

The mood-biased judgement hypothesis has been tested for different types of evaluations in a number of studies.

Experiments with likelihood/probability evaluations, generally give support to the hypothesis, at least for positive moods. Masters and Furman (1976) used self-generated thoughts to induce either a happy or a neutral mood in children. In accordance with the mood-biased judgement hypothesis, the children in a happy mood

condition had a greater expectancy for positive unrelated outcomes, than was the case for the control group children. It is however interesting that induced negative mood did not generate the opposite effect.

Bower and Cohen (1982) report symmetrical findings for both negative and positive moods. Using post-hypnotic suggestion to induce either a sad, neutral or happy mood, the subjects were asked to make probability estimates of future events. When happy, subjects elevated their probability estimates for positive future events and reduced estimates of negative future events compared to the neutral group. For the sad subjects it was the opposite.

Johnson and Tversky (1983) used newspaper stories about tragic events to induce negative moods. Shortly after mood-induction, the subjects were asked to estimate the frequency of different types of risks and undesirable events. The results indicated that the mood-inducing story increased the frequency estimates for all kinds of risks, and contrary to Johnson and Tversky's (1983) expectations, the mood effect was just as strong for types of risks that were unrelated to the event described in the story, as to risks that were similar:

*"The effect was independent of the similarity between the story and the estimated risk. An account of a fatal stabbing did not increase the estimates of a closely related risk, homicide, more than the estimates of unrelated risks such as natural hazards."*
*(p. 20)*

Support for the hypothesis is not limited to experimental settings. Two studies, Mayer and Volanth (1985), Mayer and Bremer (1985) used naturally occurring mood to investigate how mood influences probability estimates. Both studies found mood-biases in the direction predicted by the mood-biased judgement hypothesis.

Self ratings are other types of evaluations. In self-rating tasks, subjects typically rate themselves along several bipolar dimensions (e.g. honest-dishonest, warm-cold). Studies (Beck, 1967; Derry and Kuiper, 1981) have shown that when in a positive mood, subjects tend to rate themselves using positive evaluations, and vice versa for negative moods.

Another area of interest has been life satisfaction judgements, and how they are influenced by different mood states. Schwarz and Clore (1983) used two types of mood induction procedures. In their first study either positive or negative mood was

induced by asking for vivid descriptions of a happy or sad event in respondents' lives. In the second study, moods were induced by interviewing respondents either on a sunny or a rainy day.

Both studies supported the mood-biased judgement hypothesis, i.e. relative to subjects in a negative mood condition, subjects in a happy mood reported more satisfaction with their lives. As discussed above, Schwarz and Clore (1983) explain their findings by the informative function of affective states. In other words, people use their momentary mood as information in making judgements about how happy they are with their life in general.

In the two studies, some of the subjects were given the chance to attribute their mood to external sources. The results indicated a clear asymmetry for these misattribution effects. The negative effect of bad mood on life satisfaction judgements were eliminated when the subjects could attribute their mood to external sources, while the subjects who were in a good mood were not affected by misattribution manipulations. According to Schwarz and Clore (1983), this demonstrates the directive functions of affective states. As discussed earlier, when in a negative mood, this function leads to a search for information to explain the negative mood state. When in a good mood, however, no search for explanation is executed.

Mood effects on social judgements have received a great deal of attention. Griffitt (1970) used temperature as mood induction, and found that high temperatures were associated with negative mood and negative evaluations of anonymous others. Veitch and Griffitt (1976) induced positive/negative mood states by letting their subjects hear either good or bad news. Again, subjects in the good mood condition rated anonymous others more favorably than those in the bad mood condition.

Forgas and Bower (1987) used either positive or negative feed-back on a bogus personality test, as mood induction procedure. They found that mood-consistent person-perception judgements were made both more frequently and more quickly than was the case for mood-inconsistent judgements, probably because of better encoding and availability of mood-congruent material. But, they also found that the judgement-effects of negative moods were less pronounced than the effects of positive moods. Just like for Schwarz and Clore (1983), these findings support the mood-biased judgement hypothesis for positive moods, but point to weaker and more unclear effects for negative moods.

Forgas et. al. (1988) used children as subjects and found <u>no</u> support for the mood-biased judgement hypothesis. After either a happy or sad mood was induced by the means of short video-film sequences, the children were asked to form impressions of two target persons. Even though no mood bias was found, the results indicated that children in a good mood were more likely to give extreme ratings to both positive and negative descriptions of the target persons, while children in a sad mood tended to give more conservative evaluations.

Other researchers have focused on how evaluations of <u>various types of stimuli</u> have been affected by different mood states. Laird (1974) induced mood by instructing the subjects to smile or frown and found that subjects appeared to be both more happy in the smiling condition, and that they rated cartoons as funnier, than those in the frowning-condition did. Forest et. al. (1979) found that slides of faces were rated more positively as a positive mood was induced. Isen et. al. (1978) produced the same results, when positive mood was induced by finding a dime planted in a phone-booth, but no effect when giving success test feedback was used to induce a positive mood. Receiving failure test feedback, on the other hand, led to less favorable evaluations of the slides relative to a control condition where no manipulation was performed.

The mood-biased judgement hypothesis has also been tested in the area of <u>product evaluations</u>. In Isen et. al.'s (1978) study, conducted in a shopping mall, positive feeling states were induced by giving subjects a free gift. Later the subjects' were asked to participate in a "consumer opinion survey". Isen et. al. (1978) found that people who had received a free gift, rated products they owned more favorable than did people whose mood had not been manipulated.

Troye and Somrau (1988) studied the effects of two potentially mood-inducing factors, "service product quality" and "weather" on tourists' evaluations of their accommodation facility and resort area. They found support for the mood-biased judgement hypothesis for one of the factors, "service product quality". The better the service, the more favorable evaluations of both related and unrelated aspects. For the other factor, "weather" most of the evaluations had an approximate inverted U-shape, i.e. evaluations were highest for medium (neutral) weather, and lower for both good and bad weather. It should be noted that there was no manipulation check or measurement of the mood inducing properties in this study.

Srull (1984) raises the important issue of <u>familiarity</u> with regard to mood related evaluations. For instance, when asked for their opinion about a low familiarity object, most people will act in accordance with a <u>computational model</u>. This means that they will use some form of a reference frame and "compute" their answer in accordance with this. For example, imagine that you are asked the following question: "Is Buick Regal a luxury automobile?". A computational model implies that you will compare Buick Regal with your references for "luxury automobile", and figure out an answer on the spot.

For high familiarity objects, it will be different. Here, the answer to the question has already been determined and stored in memory. The subject will use a <u>retrieval model</u>, which implies that he or she just has to retrieve the answer from the memory.

Srull (1984) argues that mood states will be of greatest importance when dealing with low familiarity objects. For these objects the person has to "compute" an evaluation, and as discussed above such an evaluation may very well be biased by the present mood state. In contrast, when asked about an object with which he or she is already highly familiar, the person will often already have made an evaluation, and thus be more or less immune to the effects of temporary mood states.

The importance of familiarity was tested empirically by Srull (1983b), and the findings clearly support Srull's hypothesis. For low familiarity subjects, the evaluations corresponded with the mood-biased judgement hypothesis, i.e. the subjects who were in a negative mood rated the products lower than the control group and vice versa for subjects in a good mood. The high familiarity subjects, on the other hand, were not affected by their temporary mood states.

## 3.3. Mood effects on behavior

There is a wide body of work focusing on how different mood states may influence various types of behavior. As with mood effects on memory and judgement/ evaluations, the dominant hypothesis seems to point at mood-congruency effects when it comes to behavior:

<u>The Mood-Congruent Behavior Hypothesis:</u>
Positive moods will tend to increase the likelihood of performance of positive behaviors, while the opposite will be true for negative moods.

The link between mood and behavior may be seen as both direct and indirect (Gardner, 1985). Viewed as a direct link, behavior is a conditioned response. In some cases, automatic behavioral responses may be largely inborn or instinctive. Plutchik (1980a) for example, argues that emotions have evolved as a necessity for the survival of the species. Simon (1982) claims that emotions represent a mechanism for the interruption and redirection of attention and behavior.

Others (e.g. Gardner, 1985) state that a direct link between mood and behavior, may be established through repeated experience, socialization, or acculturation. Cialdini and Kenrick (1976), for example, found that an experimentally induced depressed condition increased helpfulness among older children, but not among younger ones.

An indirect link between mood states and behavior, implies that the relationship is somewhat mediated by cognition. Behavioral effects, are thus seen as secondary to the memory- and judgement effects we have discussed above.

Most of the research on behavioral mood effects, has focused on altruistic behavior. Aderman (1972) used the Velten procedure to induce elation and depression, and found that elation led to higher willingness to help others. Subjects in an elated mood state were also more likely to volunteer for a future unpleasant experiment, than was the case for subjects in a depressed mood state. Isen and Levin (1972) used a slightly different design. Instead of comparing elated subjects with depressed subjects, they used a no manipulation control group. In their first experiment, positive mood was induced by giving the subjects cookies, in the second by planting a dime in a phone-booth. In both studies, compared to subjects in the control group, the subjects in the treatment group were more willing to help others.

The results from Isen and Levin's (1972) second experiment could not be replicated in a study by Blevins and Murphy (1974). Using the same procedure with the dime in a phone-booth, the results yielded no relationship between finding a dime and helping. This failure to replicate Isen and Levin's (1972) findings speaks against the mood-congruent behavior hypothesis. The same experiment was replicated once again by Batson et. al. (1979). This time the hypothesis was supported by the fact that subjects who found the dime in the phone-booth were more willing to help another person, than subjects in the control-group were.

Using a different mood induction procedure, the mood-congruent hypothesis was refuted by Regan et. al.'s (1972) findings. In this study, the subjects were asked to use a camera that did not work. Negative mood was induced when the experimenter implied that the subject broke the camera, while neutral mood in the control group was maintained by stating that the defect was not the subject's fault. Contrary to what the mood-congruent behavior hypothesis would predict, the subjects in negative mood condition proved to be more willing to perform an unrelated helping task. This result indicates that not all negative mood states will lead to mood-congruent behavior. It is very likely that the mood-treatment made the subjects feel guilty, and that this feeling of guilt governed the mood-incongruent behavior. The guilt-explanation was given further support in Donnerstein et. al.'s (1975) study, where viewing slides featuring flowers and sunsets did not influence willingness to help, while slides showing old people and migrant workers did.

Several researchers have found inconclusive or asymmetrical results. Forest et. al. (1979) used false meter feedback regarding feelings to induce different mood states, and found that a positive mood was associated with enhanced helping on an agreeable task, but not on a disagreeable one. Weyant (1978) found consistent mood-congruent effects on helping tasks for positive moods, while the effects for negative moods were dependent on the costs and benefits of the helping task. The mood induction procedure used, was to give either positive or negative feedback on a test.

Cialdini and Kenrick (1976) found that a sad mood was associated with increased helpfulness for older children, but not for younger ones. The results clearly refute the mood-congruent behavior hypothesis. As to the difference in effects between younger and older children, this can be interpreted as support for the notion that socialization forms the basis for the effects of negative moods on altruistic behavior (Gardner, 1985). In other words, as children grow up, they are taught to control their behavior so that it is not influenced by temporary negative mood states.

Isen and Simmonds (1978), induced positive mood states by employing the dime-in-a-phone-booth procedure, and found that subjects who had found the dime were more willing to read statements allegedly designed to induce good moods and less willing to read statements designed to induce bad moods, than subjects in the neutral control condition were. The results indicate that a good mood increases the willingness to help, but only if the helping-task is non-threatening to the perseverance of the favorable mood state.

Another area of interest has been to study how mood influences <u>generosity</u>. By using a success/failure procedure, Mischel et. al. (1968) found that children in the success condition were more generous than those in the failure condition. Isen (1970) replicated this finding, using adult subjects. When a third control group was included (Isen et. al., 1973), the effect of failure relative to the neutral mood condition depended on the circumstances of the failure. Moore et. al. (1973) manipulated mood by self-generated thoughts. Using three groups; negative, neutral and positive moods, the results indicated consistent support for the mood-congruent behavior hypothesis: Subjects in the positive mood condition contributed most to a charity, while subjects in the negative mood condition contributed the least. All subjects in this study were children.

The relationship between mood and a host of <u>other types of behavior</u> has also been investigated. Berkowitz and Connor (1966) using success, failure or no manipulation, found that subjects in the success group were more willing to work than the subjects in the control group were. Failure subjects expressed stronger dislike for their peers the greater the peer's dependency on them was. Fry's (1975) study indicated mood-congruent effects in children's ability to resist temptation. Mood was manipulated by self-generated thoughts, and the results showed that children in a happy-condition resisted temptation longer than children in a control-condition, who in turn resisted longer than those in an unhappy-condition.

Seeman and Schwarz (1974) used a success/failure procedure to induce mood states in their study of children's choice-behavior. After mood had been induced they found that relative to children in a failure-condition, those in a success-condition chose a large delayed reward, rather than a small immediate one. Moore et. al. (1976) replicated these findings using self-generated thoughts and an additional control group. Relative to the neutral control condition, happy children tended to choose a large delayed reward, while sad children preferred a small immediate reward.

## 3.4. Implications

The focus in chapter 3, has been on mood effects. We have presented and discussed results from research that has treated mood as an independent variable. The bulk of research has concentrated on three dependent variables; memory, judgements/ evaluations, and behavior. From research focusing on mood effects on memory it has been established that mood may influence both learning, retention and retrieval.

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A number of studies have indicated that mood states may bias judgements/evaluations, and there are mainly three theoretical explanations why these biases may occur. The first explanation views the evaluation effects as secondary to memory effects, i.e. mood-congruent material will be more accessible in memory. The second explanation is that individuals simplify the evaluation task by using their perceived affective reactions as relevant information. The third explanation states that the evaluation-criteria may be more liberal when the evaluator is in a good mood.

Mood has also been found to influence a host of different behaviors. Most of the research has focused on altruistic behavior. It has been found that a positive mood increases subjects' willingness to help. For negative moods, mood-incongruent results have often been found, due to guilt-effects and socialization-effects. Some researchers have studied mood effects on generosity, while others have examined behaviors like willingness to work, ability to resist temptation, and choice-behavior.

Regarding mood effects on memory and judgements/evaluations, and to a less extent effects on behavior, research points to asymmetric effects of positive- and negative moods. In other words, while the effects of a positive mood usually are in a mood-congruent direction, the opposite will not necessarily be true for negative moods.

In the empirical study, the focus will be on how mood may bias evaluations. The most important part of chapter 3, will thus be the second section concerning mood effects on judgements and evaluations. The mood-biased judgement hypothesis presented in this section, will be used as a basis for some of the hypotheses in this empirical study. We have also discussed the informative function of mood states, and this concept will be highly relevant both for the research model and for the hypotheses.

Mood effects on evaluations, can be seen as secondary to mood effects on memory. This means that the first section will also be relevant for the empirical study. The discussion of mood effects on behavior was included primarily to present the total picture of research concerning mood effects. The results discussed in this section will thus not have any direct relevance for the empirical study. However, it is worth noticing that mood effects on behavior will be highly relevant for the discipline of consumer behavior. While the focus in this dissertation is on evaluations, the most important variable in consumer behavior will be the actual purchase. Mood has been found to influence a number of different behaviors, and will undoubtedly also have relevance for buying behavior.

# CHAPTER 4

# Mood induction procedures

In this chapter, we will focus on some of the ways in which mood has been manipulated and measured. After reviewing more than a hundred articles about mood related research, it is our belief that the different mood inducing procedures can be divided into the following groups:

```
          Mood  induction  procedures

 1. True experiments
 2. Quasi experiments with experimenter-induced treatment
 3. Quasi experiments with unobtrusive measures
 4. Quasi experiments with self-report measures
 5. Observational studies
```
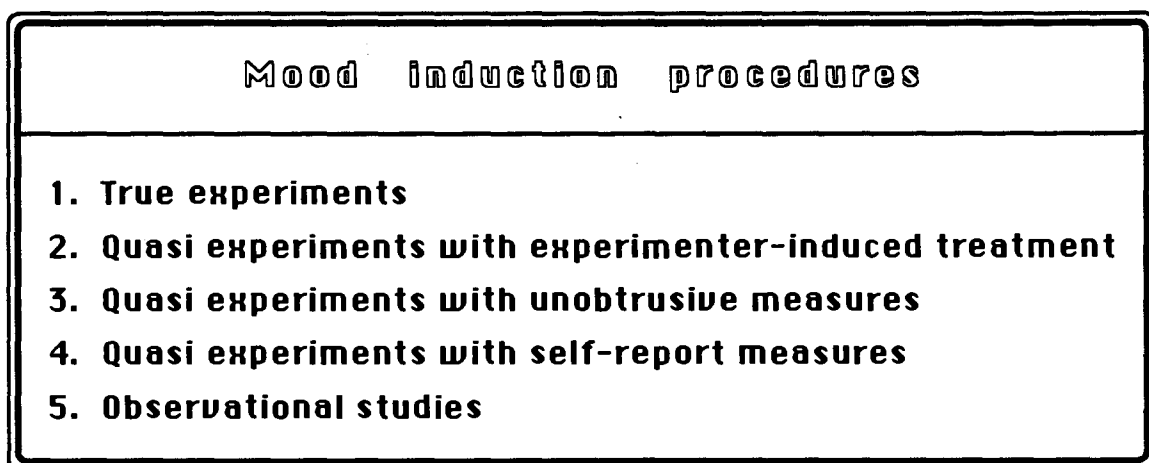
Figure 4.1: Mood induction procedures

Two necessary conditions characterize true experiments (Cook and Campbell, 1979). The first condition is that the experimenter must be able to manipulate the experimental variable. The second condition concerns the assignment of experimental treatment. In true experiments the experimenter must be able to control which subjects will receive treatment, and assign the rest of the subjects to a control group. To ensure that the two groups are identical, this separation is usually performed by means of randomization. True experiments are therefore often called randomized experiments.

In quasi experiments, the first condition is still valid, while the second is somewhat relaxed. In other words, the experimenter is still able to control the manipulation, but the assignment of subjects to experiment- and control-groups is no longer in the experimenter's command. This implies that if a quasi experimental design is used, the experimenter can no longer be certain that the two groups are equivalent.

In observational studies, none of the two conditions are met. Observational studies of mood for instance, use naturally occurring mood, and mood manipulation is thus beyond the researcher's control. Without the ability to manipulate mood, it is virtually impossible to separate the subjects into experiment- and control-groups.

The distinction between the various types of studies can be illustrated in the following figure:

## Control with experimental manipulation

|  | Yes | No |
|---|---|---|
| **Control with assignment — Yes** | True experiment | |
| **Control with assignment — No** | Quasi experiment | Observational study |

**Figure 4.2: The distinction between various types of studies**

In the remainder of this chapter we will use this distinction to present some of the mood induction procedures that have been used in previous studies.

## 4.1. True experimental mood induction procedures

The majority of mood-studies can be classified as true experiments. As most true experiments, they generally use a laboratory setting. It seems that in most of these studies, college students are used as subjects. However some studies use school children (e.g. Isen et. al., 1973; Bartlett and Santrock, 1979; Forgas et. al., 1988) or school teachers (Isen, 1970).

For some of the procedures, mood is induced without the subjects taking an active part in the induction. In other words, induction is performed using some other form of accessory. In mood induction procedures where the subjects are active, mood induction is a result of some form of activity within the subject, that leads directly to the induction of the desired mood state. A classification of true experimental procedures, using this active/passive distinction, is presented below:

```
              +--------------------------+
              |   True experimental      |
              |      procedures          |
              +--------------------------+
               /                        \
+---------------------+      +---------------------+
|  Subjects   passive |      |  Subjects   active  |
+---------------------+      +---------------------+
```

| Subjects passive | Subjects active |
|---|---|
| 1. Mood induction procedure disguised as a test | 1. Manipulate subjects' facial expressions |
| 2. Audiovisual stimuli | 2. Description/recall of earlier life events |
| 3. Gifts | 3. Velten procedure |
| 4. Physical stimuli | 4. Self-generated thoughts |
| 5. Actual experiences | 5. Word associations |
| 6. Attractiveness | 6. Hypothetical situations |
| 7. Stories | |
| 8. Combination techniques | |

Figure 4.3: An overview of true experimental mood induction procedures

One of the most frequently used mood induction procedures has been to give the subject a success/failure experience. By giving negative feedback on e.g. a test, negative mood is induced, and vice versa for positive feedback. Other popular procedures use audiovisual stimuli like slides, music or videotapes to induce the desired mood state. Some researchers have used gifts like money and refreshments mainly to induce mood states with a positive valence, while others have relied on physical stimuli or actual experiences. Storytelling has been utilized especially in studies where the subjects are children, while others again have employed combination techniques. In a study by Schwarz et. al. (1985) for instance, the effect of a fear arousing film was accentuated by giving the subjects a placebo pill.

In the table below, examples of passive true experimental mood induction procedures are given. As explained above, these procedures use some form of accessory, which means that the subjects are not taking an active part in the mood induction.

# True experimental procedures, subjects passive

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions |
|-------|--------------------------|-------------------------|--------------------------|
| Clark and Waddell (1983) | **Disguised as a test** Feedback on bogus-test | + Positive 0 No feedback - Negative | Setting: Laboratory Subjects: College students Manipul. check: Yes |
| Isen et. al. (1987) | **Audiovisual stimuli** 5 minute segments of film | + Comedy film 0 Instructional film - Documentary film from Nazi concentration camps | Setting: Laboratory Subjects: College students Manipul. check: Yes |
| Isen et. al. (1982) | **Gifts etc.** Refreshments/gifts | + Subjects received juice and cookies + Subjects received a gift of $1 0 No manipulation | Setting: Laboratory Subjects: College students Manipul. check: No |

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions |
|---|---|---|---|
| Griffitt (1970) | **Physical stimuli**<br>Effective temperature | 0 Normal temperature<br>- Hot and humid | Setting: Laboratory<br>Subjects: College students<br>Manipul.<br>check: Yes |
| Barden et. al. (1985) | **Actual experiences**<br>Subject rejected by another child | + The other child stated that he or she would gladly play with the subject<br>- The subject was rejected | Setting: Laboratory<br>Subjects: Second grade children<br>Manipul.<br>check: Yes |
| Clark et. al. (1987) | **Attractiveness**<br>Attractiveness of other person | + The attractive person indicated that he/she was single and interested in meeting people<br>- The attractive person indicated that he/she was married | Setting: Laboratory<br>Subjects: College students (all single)<br>Manipul.<br>check: Yes |
| Johnson and Tversky (1983) | **Stories**<br>Newspaper reports | + Subjects read a story designed to produce positive affect<br>0 Neutral filler story<br>- Subject read an account of a tragic event | Setting: Laboratory<br>Subjects: College students<br>Manipul.<br>check: Yes |
| Baron et. al. (1985) | **Combination techniques**<br>Negative ions and provocation | 0 Subject was not provoked<br>- Subject was strongly provoked<br><br>Both conditions were performed with low, medium or high concentrations of negative ions in the room. | Setting: Laboratory<br>Subjects: College students<br>Manipul.<br>check: Yes |

**Table 4.1:** Examples of true experimental mood induction procedures where the subjects are passive

To save space, the examples in table 4.1 are limited to one study per induction-type. A more comprehensive overview of studies is given in appendix 1.

Other procedures demand an active participation by the subjects. In some studies, the subjects have been asked to recall earlier life events or place themselves in affect arousing hypothetical situations. Some researchers (e.g. Laird, 1974; Laird et. al., 1982) have asked their subjects to either smile or frown and anticipated that the subjects' facial expressions will lead to congruent changes of their mood states.

Perhaps the most widely used technique for mood induction is the so-called Velten procedure (Velten, 1968). This is a direct suggestion technique, where subjects are asked to read a set of 50 positive, negative, or neutral statements. The Velten procedure has the advantage that its effects are reasonably well known, but the disadvantage that it is very time-consuming as subjects are run individually. Furthermore, recent research (Isen and Gorgoglione, 1983) indicates that the mood state induced by the Velten procedure may last only a short period after the induction.

In table 4.2 below, examples of active true experimental mood induction procedures are presented. As mentioned earlier these procedures require an active participation by the subjects. Only one example per induction-type is included in the table. For a more comprehensive account, see appendix 1.

# True experimental procedures, subjects active

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions |
|-------|--------------------------|-------------------------|-------------------------|
| Laird (1974) | **Manipulation of subjects' facial expressions** <br> Subjects were instructed to smile or frown without awareness of the nature of their expressions | + Subjects smiled <br> - Subjects frowned | Setting: Laboratory <br> Subjects: College students <br> Manipul. <br> check: Yes |
| Schwarz and Clore (1983) | **Description/recall of earlier life events** <br> Descriptions of earlier life events | + Subjects asked to describe a happy event <br> 0 No manipulation <br> - Subjects asked to describe a sad event | Setting: Laboratory <br> Subjects: College students <br> Manipul. <br> check: Yes |
| Isen and Gorgoglione (1983) | **Velten procedure** <br> Velten statements | + Positive statements <br> 0 No manipulation <br> - Negative statements | Setting: Laboratory <br> Subjects: College students <br> Manipul. <br> check: Yes |
| Moore et. al. (1973) | **Self-generated thoughts** <br> Self-generated thoughts | + Happy thoughts <br> 0 Subjects asked to sit quiet for 30 seconds <br> 0 Subjects asked to count slowly for 30 seconds <br> - Sad thoughts | Setting: Mobile trailer <br> Subjects: Children <br> Manipul. <br> check: No |
| Isen et. al. (1985) | **Word associations** <br> Word-association to affectively valenced words | + Positive words <br> 0 Neutral words <br> - Negative words | Setting: Laboratory <br> Subjects: College students <br> Manipul. <br> check: Yes |
| Meyer and Mulherin (1980) | **Hypothetical situations** <br> Subjects asked to imagine a specific situation and indicate the extent to which they believed they would experience various emotional reactions | For different situations subjects reacted with: <br> + Empathy <br> - Anger <br> - Concern | Setting: Laboratory <br> Subjects: College students <br> Manipul. <br> check: Yes |

Table 4.2: Examples of true experimental mood induction procedures where the subjects are active

## 4.2. Quasi experimental mood induction procedures

As mentioned earlier, the quasi experimental procedures can be divided into three different groups:

1. Quasi experiments with experimenter-induced treatment
2. Quasi experiments with unobtrusive measures
3. Quasi experiments with self-report measures

Procedures in the first group have all in common in that it is the experimenter who activates the mood induction. Popular techniques include giving out cookies (Isen and Levin, 1972), or free gifts (Isen et. al., 1978). In a number of studies (e.g. Isen and Levin, 1972; Blevins and Murphy, 1974; Batson et. al., 1979) favorable moods were induced by letting people find a dime in a phone-booth or a similar location. Several studies (e.g. Bower et. al., 1981; Natale and Hantas, 1982) have utilized hypnosis to induce certain mood states. The major disadvantage of this procedure is that only about 20% of the population is highly hypnotizable (Srull, 1983a). If the experimental groups consist of hypnotizable subjects, while subjects in the control group are members of the general population, the experiment will undoubtedly be reduced to a quasi experiment. However if only hypnotizable subjects are used, and assigned to either negative, neutral or positive mood states on a randomized basis after they have been hypnotized, the experiment will, in our opinion, maintain the properties of a true experiment.

Procedures in the second and third group are all natural experiments, i.e. the experimental manipulations occur without any involvement from the experimenter. We have divided these procedures into two groups. For some procedures like weather and temperature, the experimenter has been able to get unobtrusive measures of the treatment's magnitude. Other procedures require self-report measures from the subjects. These procedures include service quality, postpartum depression, and the impact of stressors.

Table 4.3 below, contains examples of different quasi experimental procedures. In the table, only one example for each type of quasi experimental procedure is included. A more comprehensive list can be found in appendix 1.

# Quasi experimental procedures

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions |
|---|---|---|---|

**Quasi experiments with experimenter-induced treatments**

| | | | |
|---|---|---|---|
| Isen and Levin (1972) (study 1) | Gave subjects free cookies in library | + Received cookies<br>0 No manipulation | Setting: University library<br>Subjects: College students (all males)<br>Manipul. check: No |

**Quasi experiments with unobtrusive measures**

| | | | |
|---|---|---|---|
| Troye and Somrau (1988) | Weather on vacation | + Good weather<br>0 Medium weather<br>- Bad weather | Setting: Hotels<br>Subjects: Tourists<br>Manipul. check: No |

**Quasi experiments with self-report measures**

| | | | |
|---|---|---|---|
| Goodhart (1985) | Stressful events and positive/negative thinking | + Positive thinking may temporarily reduce the negative impact of stressful events<br>- Negative thinking may increase the negative impact of stressful events | Setting: Laboratory<br>Subjects: College students<br>Manipul. check: Yes |

Table 4.3: Examples of quasi experimental mood induction procedures

## 4.3. Observational studies of mood

In a fairly large number of studies mood induction has been omitted altogether, and the focus has instead been on the natural variation of the subjects' mood states. Several of these studies have used daily self-report measures for periods of three months or more. The advantage of this method is the possibility of both intraindividual as well as interindividual comparisons. However, as for all observational studies, it is difficult to use the data to make conclusions about causal relationships.

One of the first major studies to use naturally occurring mood was Wessman and Ricks (1966). In this study the fluctuations of daily affect in a small group of students were investigated. Bradburn (1969) was responsible for the next important study using naturally occurring mood. He used several national samples, and was able to draw important conclusions about the structure of mood change.

In the last two decades, numerous studies have focused on naturally occurring mood. Some have looked at mood in isolation, to learn more about fluctuations in mood and the structure of mood states, while others have been interested in the relationship between mood states and other types of variables. Some examples of observational studies of mood are presented in table 4.4 below. A more comprehensive list is found in appendix 1.

## Observational studies

| Study | Focus | Study-conditions | |
|---|---|---|---|
| Costa and McCrae (1980) | The relationship between naturally occurring mood and personality variables | Setting: <br> Subjects: <br> Measure- <br> ment: | Natural <br> Mainly white veterans <br><br> Series of four questionnaires at intervals of three months |
| Lefcourt et. al. (1981) | Locus of control as a modifier of the relationship between stressors and mood | Setting: <br> Subjects: <br> Measure- <br> ment: | Natural <br> College students <br><br> Daily mood measures for four weeks |
| Stone (1981) | The association between perceptions of daily experiences and self- and spouse-rated mood | Setting: <br> Subjects: <br> Measure- <br> ment: | Natural <br> Married couples <br><br> Both spouses completed daily measures of husband's mood for two weeks |
| O'Malley and Gillette (1984) | The relationship between personality traits and emotions | Setting: <br> Subjects: <br> Measure- <br> ment: | Laboratory <br> College students <br><br> Single self-report measurement |

Table 4.4: Examples of observational mood studies

## 4.4. Implications

The focus in chapter 4 has been on mood induction procedures. We have divided the various procedures into three groups; true experimental procedures, quasi experimental procedures, and observational studies. Examples of the different types of procedures have also been presented. A more comprehensive list of the various mood induction procedures is given in appendix 1.

The great variety of mood induction procedures that have been used over the years, bear witness of creativity in the academic community, but has the apparent disadvantage that it may be difficult to make comparisons between studies using different techniques. This last bit of criticism could be reduced if all studies used the same manipulation check, but alas, not all studies employ manipulation checks and if they do, the manipulation check is often used in only that study. However, there seems to have started a trend in standardizing manipulation checks, where Nowlis' (1965) Mood Adjective Check List tends to come out as the dominant manipulation check.

In the next chapter we will present the model that has been used as a basis for the empirical study. We will also give a description of the subjects and discuss the research design. In this discussion, we will use the distinction in chapter 4 to classify the mood induction procedures employed in this study.

# Part III

# DESIGN AND

# MEASUREMENT

# CHAPTER 5

## Model, subjects, and design of the empirical study

As we have mentioned previously, the focus for the empirical part of this dissertation, will be on mood effects in the context of product evaluations. Through several experiments we have made an attempt to estimate the impact of the subjects' mood states on the evaluations they make with regard to the product "Norway as a travel destination". A central part of the empirical study has been to determine how information about Norway, linked to a mood induction procedure will influence evaluations, as opposed to procedures without any informational content.

In the current chapter, we will present and discuss the model that has been used as a basis for the empirical study. We will also explain why "Norway as a travel destination" has been selected as product, give a description of the subjects and the stimulus material that was used in the experiments, and finally present an overview of the chosen research design. In the next chapter, measurement issues will be discussed, while the results from the experiments will be presented and discussed in chapters 7 to 10.

## 5.1. Model

The following model has been used as a basis for the empirical study:
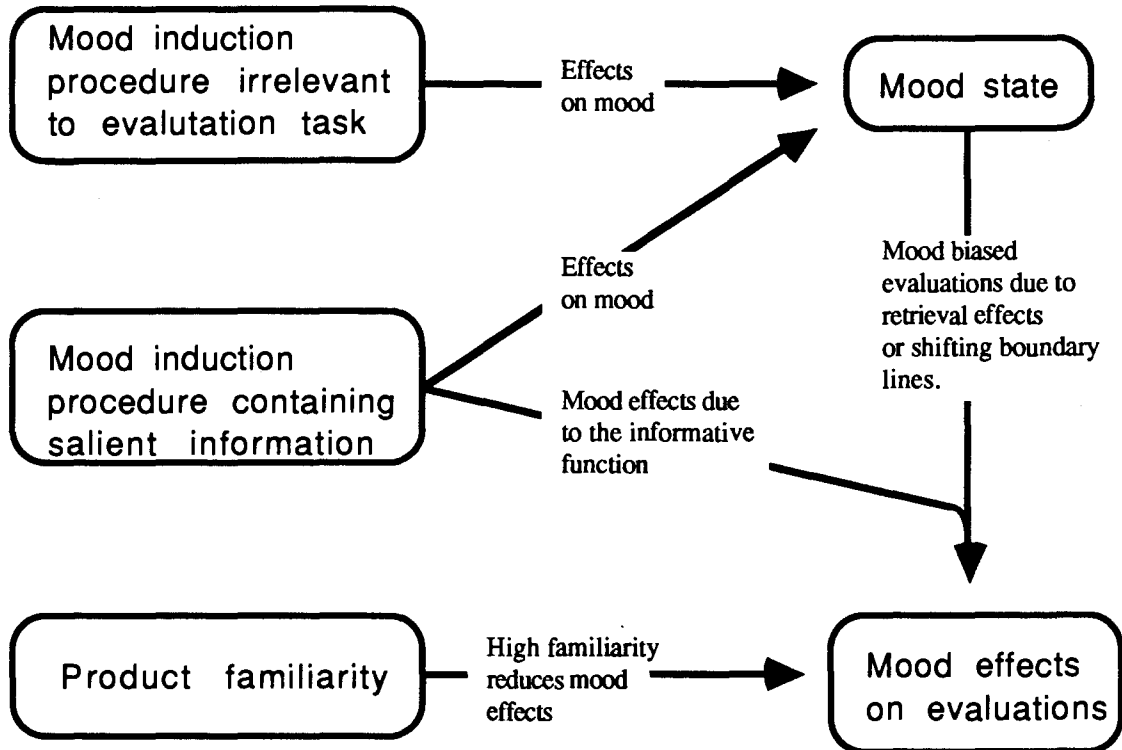


**Figure 5.1: The research model**

On the left side of the model, we find the mood induction procedures. In the model there are two types of procedures. The first is a pure mood induction procedure, i.e. it does not give any information that is salient for the evaluation task. The second procedure combines mood induction with information relevant for the evaluation task, and is thus a combined mood induction and information procedure.

As discussed in chapter 3, there seems to be three explanations to why mood effects on evaluations may occur. The first explanation, is that mood can serve as a retrieval cue, and thus make mood-congruent material more accessible in memory. If the evaluator employs an availability heuristic (Tversky and Kahneman, 1973), the result will probably be a mood-congruent evaluation-bias. The second explanation is related to the informative function of mood states. As we recall from chapter 3, this function

implies that individuals simplify the evaluation task by using their perceived affective reactions as relevant information. The third explanation is that of shifted boundary lines, or to put it differently, the possibility that the evaluator becomes more liberal when in a good mood.

It is hypothesized that because of differences in information content, the two procedures will have dissimilar effects on evaluations. The pure mood induction procedure is hypothesized only to have an effect on the subjects' mood states. Any mood-biases that may occur will thus result from retrieval effects or shifting boundary lines, i.e. effects that are in accordance with the first and third explanations discussed above. For the second mood induction procedure, it is predicted that because of the informational content, an attribution-link between induction and evaluation task will be established. In other words, the subjects' mood states are expected to be considered as relevant for the evaluations, which means that mood-bias will be accentuated by the informative function of mood states.

In chapter 2, a fairly comprehensive account of mood states was given. As we recall from this chapter, emphasis was put on the independence of positive- and negative affect, and as we shall discuss in the next chapter, this will have implications for the construction of the mood-measure. In chapter 4, we have given a presentation of the various mood induction procedures that have been employed in other studies. Later, in the current chapter we will make an attempt to position the two procedures used in this study in accordance with the classification-scheme proposed in chapter 4.

In the lower left of the model we find "product familiarity". The importance of familiarity with regard to mood effects, has been discussed in chapter 3. According to previous research, there will be a negative correlation between product familiarity and mood effects. In other words, if a person knows a great deal about the product, chances are that his/her temporary mood state will not represent a biasing factor in the evaluation he or she makes.

The dependent variable in this study will be mood effects on evaluations. This component is positioned in the lower right of the model. Mood effects on evaluations, or to put it differently, how mood states may affect evaluations, is an important issue both from the perspective of consumer behavior and survey methodology. For the discipline of consumer behavior, mood will mainly be relevant as a marketing tool.

The main contribution of this study with regard to consumer behavior, will thus be to investigate the effect of a pure mood induction procedure, as opposed to a procedure where mood induction is combined with salient information. For the discipline of survey methodology, the main contribution of this study will be an attempt to determine how serious a threat respondents' mood states may constitute for the validity of survey-data.

## 5.2. Why "Norway as a travel destination" was chosen as product

As we have already explained, the main purpose of the empirical study was to determine what impact the subjects' mood states would have on their evaluations of "Norway as a travel destination". There are several reasons why this particular tourist product was selected as object for the empirical research.

First, the tourist product constitutes a rather complex combination of goods and services. Elements like meals and hotels will of course be necessary, but a vacation will also have to include less tangible aspects like scenery, culture and attractions, as well as the tourist's own activities such as hiking, sports and sightseeing (Troye and Somrau, 1988). In the evaluation of a travel destination, a thorough evaluator will therefore have to compare and weigh a great number of product dimensions against each other, before he or she can reach an overall judgement of the product. Previous research has shown that faced with a complex evaluation task, people will often employ some form of a simplifying strategy. As we have discussed earlier, one strategy may be to rely on an availability heuristic, another may be to use the informative function of mood states as basis for their evaluation. By using this second strategy, the evaluator simply asks himself "How do I feel about this travel destination". As we have discussed earlier, both strategies can lead to mood-biased evaluations.

It was thus anticipated that the complexity of the travel product would complicate the evaluation process, and consequently make the evaluations more vulnerable to mood effects, than would be the case for less complex products. Most studies of mood effects on product evaluations (see Gardner, 1985 for a review), have focused on more trivial products. Our choice of product, should thus represent a new approach in this line of research.

A second characteristic of the vacation product is that the tourist is not merely a passive consumer, but rather an <u>active</u> participant in the "production" of the vacation. The tourists role will thus be that of a "prosumer" (Toffler, 1980). If a person is asked to evaluate a travel destination, the person will probably have this "prosumer" role in mind. The evaluation will in others words, not only be limited to external aspects like hotels and meals, the evaluator will most likely try to imagine himself/herself on vacation at the travel destination (Troye, 1989).

If the evaluator is depressed chances are that he or she will have a negative outlook at his/her possibilities to "produce" a successful vacation. For instance, while watching a film from a travel destination where people are having fun together, the evaluator may think: "I am not very sociable. If I go on a vacation there, I will probably be alone all the time, while all the other tourists mingle together." On the other hand, if the evaluator is in a good mood, the following thoughts may fill his/her mind: "Maybe I am not particularly sociable, but the other tourists seem very friendly. If I go on vacation there, some of them will probably notice me so that I can join them." When in a favorable mood, the evaluator will thus have greater confidence in his/her role as a "prosumer" and this may in turn bias his/her evaluation in a mood-congruent direction.

It was anticipated that the "prosumer" role would highlight the importance of mood states. Thus, we expected the evaluation of the tourist product to be more sensitive to mood effects, than would be the case for products that do not require the consumer's active participation.

"Norway as a travel destination" was assumed to be a low-familiarity product, and this was the third reason why this particular product was chosen as object for this research. In the experiments, the pool of subjects was restricted to college students at a major U.S. university, and previous information indicated that the subjects' familiarity with Norway, both in general and as a travel destination was fairly limited. This meant an opportunity to manipulate product familiarity rather freely. Most studies of mood effects on product evaluations have focused on high-familiarity products. Isen et. al. (1978) for instance, asked their subjects to evaluate products they owned. By focusing on a low-familiarity instead of a high-familiarity product, our research should represent a fairly new approach in research concerning mood effects on product evaluations.

In addition to the three reasons discussed above, there were two more pragmatic reasons for choosing "Norway as a travel destination" as product. First, several of the variables used in this study were sampled from previous tourist surveys. This made a comprehensive pre-testing of the variables superfluous, and also provided an opportunity to compare the results with data from tourists that had actually been to Norway. Secondly, the proposed study attracted at an early stage, the interest of the Norwegian Ministry of Transportation, which both gave the project financial support and supplied some of the audiovisual material that was used in the experiments.

We have now discussed a number of reasons why "Norway as a travel destination" was selected as object for this study. Next, we shall give a description of the subjects and the stimulus material that was used, and present an overview of the research design.

## 5.3. Description of subjects

A total of 239 subjects participated in the experiments. The date for the first session was November 9, 1988, while the last session was conducted on April 27, 1989. The total number of sessions was 18[1], which means that the average number of participants in each session was slightly more than 13. All subjects participated in one session only.

The subjects were recruited from the subject pool at Department of Business Administration, University of Illinois at Urbana-Champaign. This subject pool consists of approximately 1600 undergraduate students in their junior- or senior-years, and those who sign up for experiments, receive credit for their participation.

In the study, only gender and ethnic background was collected as demographical data. Because the focus for this study was "Norway as a travel destination", ethnic background was anticipated to have some importance, at least in cases were the subjects' ancestors were immigrants from Norway or one of the other Scandinavian countries.

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[1]A total of 16 experimental conditions was included in my experiments. Because of few subjects in two of the groups, two additional sessions were conducted, making the total number of sessions 18.

With regard to gender, the subjects were about equally divided with 119 males and 120 females. As for ethnic background, the subjects informed that their ancestors came from the following countries:

| Country | Frequency | Percentage |
|---|---|---|
| 1. Germany | 125 | 52.3% |
| 2. Ireland | 73 | 30.5% |
| 3. England | 47 | 19.7% |
| 4. Poland | 41 | 17.2% |
| 5. Italy | 28 | 11.7% |
| 6. France | 23 | 9.6% |
| 7. Russia | 20 | 8.4% |
| 8. Africa | 13 | 5.4% |
| 9. Scotland | 12 | 5.0% |
| 10. Norway | 11 | 4.6% |
| ............ | | |
| 13. Sweden | 8 | 3.4% |
| ............ | | |
| 20. Denmark | 4 | 1.7% |

**Table 5.1: Ethnic background of subjects**

As we can see from the table above more than half of the subjects informed that they had German ancestors, and about one-third had ancestors from Ireland. Less than five per-cent reported Norwegian ancestry, still this percentage is higher than that of the other Scandinavian countries; Sweden and Denmark.

All subjects completed their questionnaire, making the response rate 100%. The response-quality was satisfactory. For the demographic data, all subjects gave the required information. In one of the questionnaires, half of the Mood Adjective Check List was left unanswered. When it came to the evaluations of Norway and the other destination, one person omitted two evaluations and another omitted one evaluation (out of forty). The remaining questionnaires were complete for these variables. No missing values were recorded for the personality measures in section 3 of the questionnaire. Section 4, where knowledge about Norway was measured, was the only part where the response-quality was somewhat low. While almost all subjects knew or tried to guess the population of Norway, 22% left the question about Norwegian cities unanswered.

About 7% did not make any attempt to indicate what countries Norway shares borders with, or what the three main industries in Norway are. For the last question where the subjects were asked to indicate which persons are/were Norwegians, only one person omitted this question altogether.

There are reasons to believe that many subjects left the questions in Section 4 blank, because of a lack of knowledge. In the questionnaire, it was stated that if the subjects did not know the correct answer, they should try their best guess. However, after the sessions several subjects told me that they had omitted certain questions, because they simply had no idea what to answer.

## 5.4. Description of stimulus material

In the experiments, two variables were manipulated; information about Norway in a mood inducing form and mood induction with no informational content. For both variables, it was decided to use videotaped films as mood induction procedures. Furthermore, within each experiment we chose to assign the film treatment on a randomized basis. Using the classification-scheme from chapter 4, the mood induction procedures can thus be classified as true experimental procedures. In chapter 4, we made a distinction between procedures where subjects were passive vs. procedures requiring the active participation of subjects. Because active participation by the subjects was not required in the study, the procedures will be classified as passive.

For the first variable, the following film was used as material:

Norway, Europe never looked so good
This promotional film is produced by the Norwegian Tourist Board, especially for use on the U.S. market. It runs about 21 minutes, and during that time it tries to give the viewer a taste of everything Norway can offer as a travel destination. Like most promotional films, only favorable aspects are presented and the visual impression is supplemented with music and commentaries. The film gives, in our opinion, a great deal of information about Norway (maybe too much, so that there might be a danger of information-overload), and gives the viewer a good cross-section of what Norway can offer American tourists. In addition to its informational value, the film "Norway, Europe never looked so good" was expected to have positive mood inducing properties.

The second experimental variable was a pure mood induction procedure, i.e. it was only intended to manipulate mood, not to give any information about Norway as a travel destination. After careful consideration, it was decided to use film as material for this variable too. There were mainly three reasons for this decision.

By exclusively using films as mood induction procedures, any danger of increased variance due to different methods was eliminated. Secondly, the use of films have in a number of studies (see chapter 4) proved to be an effective mood induction procedure. In a study by Isen and Gorgoglione (1983) the use of film was compared with the Velten procedure (Velten, 1968). Although the effect varied from one film to another, Isen and Gorgoglione (1983) concluded that films generally have a more lasting effect on moods, than is the case for the Velten procedure. A third reason lies in the time-effectiveness of film as a mood induction procedure. While methods like hypnosis and the Velten procedure require subjects to be run individually, the use of film permits groups of around 10 to 20 subjects at a time.

After reviewing more than thirty different films, three films were initially selected to serve the purpose of pure mood inducing films:

The best of candid camera
This film shows people who are tricked into different awkward situations, without knowing that they are being filmed. Most subjects had seen similar films on television, and it was anticipated that seeing the really good classics would have a strong positive mood inducing effect.

Forces and moments
This is an instructional film which illustrates the way the effects of forces are used in engineering. The film is intended for use in high-school or for the general public, and was not anticipated to have any particular mood inducing properties. This film was thus used in the control group.

Night and fog
Night and fog is a very strong documentary film depicting Nazi concentration camps. With its authentic scenes of torture and genocide, the film was expected to have a very strong negative mood inducing effect.

Because of circumstances described in chapter 7, a fourth film was included:

But Jack was a good driver

The theme here is teen-suicide. Through a dramatization the subject of suicide is explored. Although the film was intended to induce a negative mood, the mood inducing properties were not anticipated to be as powerful as that of "Night and fog".

The four films were of different length, with the last-mentioned running shortest. To eliminate any disturbances that could occur due to different time-lengths, a 13 minute segment of each film was used.

## 5.5. An overview of the four experiments

In the empirical study a total of four experiments were conducted. All experiments were based on the model presented earlier, but different parts of the model were tested in each experiment. In the first experiment, only the pure mood induction films were employed. Four groups were included in this experiment, one for each film. The following parts of the research model were in focus in experiment 1:
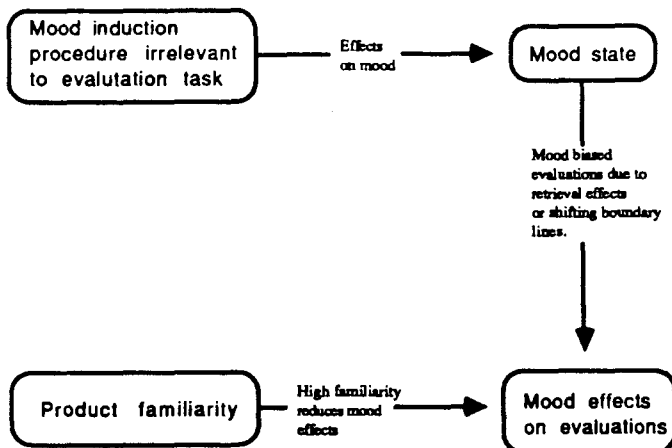


Figure 5.2: The parts of the model that were relevant for experiment 1

In experiment 2, the film "Norway, Europe never looked so good" was shown. This film was anticipated to have positive mood inducing properties, and thus represented a combination of mood induction and information. A total of three groups were included in this experiment. As we shall see in chapter 8, a ceiling-effect problem was

encountered in experiment 2. To eliminate this problem, different types of response-scales were tested in experiment 3. The following parts of the model were relevant for experiments 2 and 3:
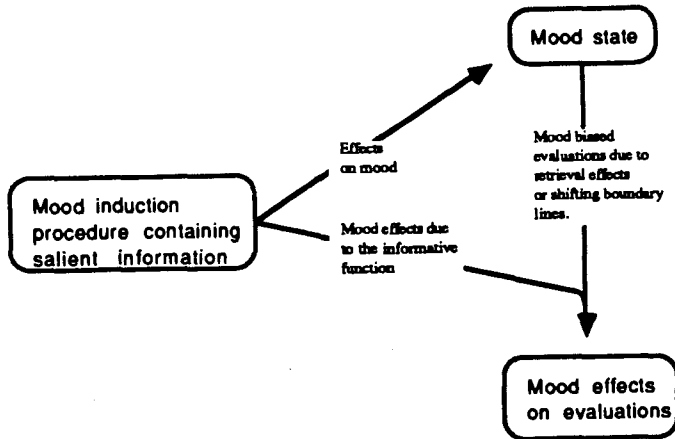


**Figure 5.3:** **The parts of the model that were relevant for experiments 2 and 3**

Experiment 4 constitutes the last part of the empirical study. In this experiment, a total of six groups were used to try out different combinations of the two experimental variables. For experiment 4, the following parts of the model were relevant:
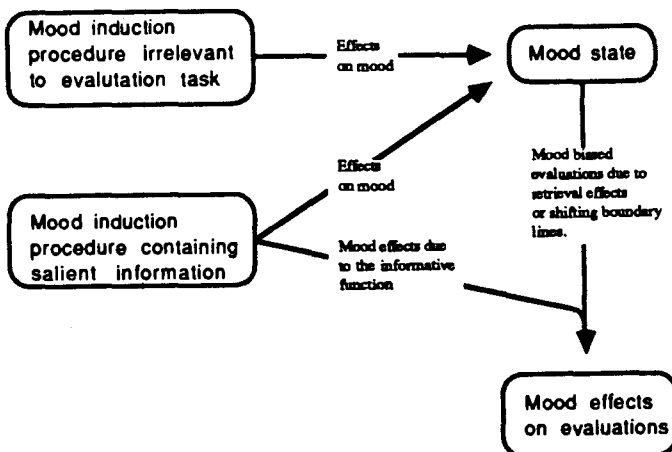


**Figure 5.4:** **The parts of the model that were relevant for experiment 4**

To further clarify the relation between the various experiments, we will present an overview of the manipulations that were performed in the four experiments. This is done in the figure below.

Pure mood induction film

|  | No | Yes |
|---|---|---|
| **No** (Norway film) | | Experiment 1 |
| **Yes** (Norway film) | Experiment 2 and Experiment 3 | Experiment 4 |

**Figure 5.5: Experimental manipulations in the four experiments**

As shown in figure 5.5 the manipulations in experiment 1 were restricted to the the pure mood induction films. For experiments 2 and 3, only the Norway-film was shown, while in each session of experiment 4, we used one of the pure mood induction film in addition to the Norway-film.

We have now given an overview of the four experiments. In chapter 11, after the results from each of the experiments have been presented, we will make an attempt to identify the strengths and weaknesses of the chosen research design. This will be done using Cook and Campbell's (1979) four types of validity; Statistical conclusion validity, Internal validity, Construct validity of putative causes and effects, and External validity.

## 5.6. Implications

In chapter 5 we started by presenting the underlying research model. Next, we discussed why "Norway as a travel destination" was chosen as product. The main reasons were found in the complexity of the product, the tourist's role as a "prosumer", and the subjects' low level of familiarity with this particular travel destination. In addition it was argued that because several of the variables were sampled from an earlier tourist survey , a comprehensive pre-testing of these variables was superfluous. Finally, the interest and support from the Norwegian Ministry of Transportation made the selected product suitable from a pragmatic point of view.

In the third section of chapter 5, a description of the subjects was given, while we in section four gave a brief presentation of the films that were employed as stimulus material. The first film *"Norway, Europe never looked so good"* gives information about Norway as a travel destination, and was expected to have positive mood inducing properties. The other four films, were pure mood inducing stimuli, i.e. they were only intended to manipulate mood, not to give any information about Norway. These four films were *"Night and fog"* (very negative mood induction), *"But, Jack was a good driver"* (mildly negative mood induction), *"Forces and moments"* (neutral control condition), and *"The best of candid camera"* (positive mood induction).

In the final section, an overview of the four experiments was given. We explained that in experiment 1, only the four pure mood inducing films were used, while the use of films in experiments 2 and 3 was restricted to "Norway, Europe never looked so good". In the last experiment (#4) combination treatments were given, i.e. all subjects watched the Norway-film in addition to one of the pure mood inducing films. In section 5, it was also explained how each of the four experiments were related to the research model by pointing out which of the components of the model were in focus.

In the next chapter we will discuss measurement issues, while the hypotheses and results from the experiments will be presented in chapters 7 to 10. The last chapter 11, will give a summary of the main findings, discuss their implications and give guidelines for further research. As previously mentioned, we will also point out strengths and weaknesses of the chosen research design, using Cook and Campbell's (1979) four types of validity.

# CHAPTER      6

# Measurement

In this chapter, we will discuss how the various components in the research model were measured in the experiments. The first measurement issue concerns the measurement of mood states. In order to estimate the effects of the experimental manipulations, a mood measure was designed using the subjects' scores on Nowlis' (1965) Mood Adjective Check List. The procedure is described in section 6.1.

Product familiarity is another component in the model. This component was measured by a special knowledge score, computed from the subjects' answers to a number of questions particularly aimed at determining the subjects' level of knowledge about Norway. The questions and the computational procedure for the knowledge score is presented in section 6.2.

The dependent variables in all four experiments were the subjects' evaluations of various aspects of Norway. Measurement issues concerning the dependent variables are discussed in section 6.3.

## 6.1. Mood measure

In all four experiments, Nowlis' (1965) Mood Adjective Check List was employed to measure the subjects' mood states. As we mentioned in chapter 4, this list is perhaps the most widely used mood measure, and it has been used in a great number of studies in the last couple of decades.

The Mood Adjective Check List consists of 35 adjectives, where the respondent is asked to indicate to what extent each of them describes his/her current mood. The respondent indicates his/her answer using a four-point response-scale. The following directions are given to the respondent:

"Each of the following words describes feelings or mood. Please use the list to describe your feelings *at the moment* you read each word. If the word definitely describes how you feel at the moment you read it, circle the double check (vv) to the right of the word. For example, if the word is *relaxed* and you are definitely feeling relaxed at the moment, circle the vv as follows:

Relaxed   (vv)   v   ?   no   (This means you definitely feel
                                      relaxed at the moment.)

If the word only slightly applies to your feelings at the moment, circle the single check (v) as follows:

Relaxed   vv   (v)   ?   no   (This means you feel slightly
                                        relaxed at the moment.)

If the word is not clear to you or you cannot decide whether or not it applies to your feelings at the moment, circle the question mark as follows:

Relaxed   vv   v   (?)   no   (This means you cannot decide
                                        whether you are relaxed or not.)

If you definitely decide the word does not apply to your feelings at the moment, circle the no as follows:

Relaxed   vv   v   ?   (no)   (This means you are definitely not
                                        relaxed at the moment.)

Work rapidly. Your first reaction is best. Work down the first column, then go to the next. Please mark all words. This should take only a few minutes. Please begin."

In the data-set the (vv) were coded as 4, (v) as 3, (?) as 2, while (no) was coded as 1. The Mood Adjective Check List with its 35 adjectives is shown in the questionnaire in appendix 2.

Several methods have been used for constructing a mood measure from the Mood Adjective Check List. Samuel (1980) for instance grouped the adjectives together in summated scales. The most common method is however the factor-analytic approach. Using this approach, the scores on the 35 mood adjectives are factoranalyzed to determine the underlying factor structure. Then each subject's factor scores are used as a basis for constructing the mood score. Nowlis (1965) seems to prefer the factor-analytic approach, and it has also been employed by a number of other researchers (e.g. Stone and Neal, 1984; Hedges et. al., 1985).

In chapter 2, we emphasized the importance of treating mood as a bi-dimensional construct. Following this logic, a factor analysis was performed, where the number of factors was restricted to two. As hypothesized the factor loadings indicated that one of the factors could be interpreted as Negative affect, while the other seemed to be Positive affect. The varimax-rotated loadings are presented below. In the literature (see e.g. Hair et. al., 1979) it is often stated that only factor-loadings exceeding I.3I should be considered as important, and I.3I has thus been used as cutoff-point. This means that only loadings exceeding I.3I are shown in the table below.

| | Negative affect | Positive affect |
| --- | --- | --- |
| Angry | .75061 | |
| Clutched up | .67744 | |
| Carefree | -.53123 | .52513 |
| Elated | -.33419 | .57912 |
| Concentrating | .42814 | |
| Drowsy | | -.30053 |
| Affectionate | | .51095 |
| Regretful | .65940 | |
| Dubious | .38934 | |
| Boastful | | .43088 |
| Active | | .70804 |
| Leisurely | -.62249 | |
| Defiant | .60823 | |
| Fearful | .69629 | |
| Playful | | .69722 |
| Overjoyed | | .63844 |
| Engaged in thought | .47214 | |
| Sluggish | | -.47888 |

**(continued next page)**

| | Negative affect | Positive affect |
|---|---|---|
| Kindly | | .49904 |
| Sad | .69055 | -.34629 |
| Skeptical | .39438 | |
| Egoistic | | .36836 |
| Energetic | | .80211 |
| Nonchalant | | |
| Rebellious | .52104 | |
| Jittery | .59505 | |
| Witty | | .55118 |
| Pleased | -.43785 | .64246 |
| Intent | .32527 | .32557 |
| Tired | | -.37622 |
| Warmhearted | -.30834 | .59981 |
| Sorry | .72039 | |
| Suspicious | .45968 | |
| Self-centered | | .37797 |
| Vigorous | | .72019 |
| | | |
| Eigenvalue | 8.28255 | 4.62124 |
| Explanatory power | 23.7% | 13.2% |

**Table 6.1:** **Factor loadings, eigenvalues, and explanatory power of the mood factors in the two-factor solution**

As we can see the first factor, which we have named Negative affect, has an eigenvalue of more than 8, and is able to explain almost 25% of the total variance in the 35 mood adjective variables. The second variable, Positive affect, is less distinct with an eigenvalue of approximately 4.6 and explanatory power of a little more than 13%. The two factors combined are able to explain as much as 36.9% of the total variance in the 35 variables. This is satisfactory. In the factor analysis, all 239 subjects were included, making the subject-to-variables-ratio approximately 6.8, which is an acceptable ratio.

Following the old idea that happiness is the sum of pleasures minus pains, each subject's mood score was computed by subtracting the subject's score on the Negative affect factor from that on the Positive affect factor. This procedure has previously been employed by Bradburn (1969).

> Mood score = Factor score on the Positive affect factor
> - Factor score on the Negative affect factor

To investigate the factor structure more closely an additional factor analysis was performed, where eigenvalue > 1 was used as an extraction-criterion. This is a common criterion in factor analysis, and a total of 8 factors were extracted. The factor loadings are presented below. Only loadings exceeding l.3l are shown.

| | Negative affect | Positive affect | Fatigue | Surgency |
|---|---|---|---|---|
| Angry | .75315 | | | |
| Clutched up | .70600 | | | |
| Carefree | -.43615 | .55056 | | |
| Elated | | .73703 | | |
| Concentrating | | | | |
| Drowsy | | | .85762 | |
| Affectionate | | .74970 | | |
| Regretful | .77034 | | | |
| Dubious | | | | |
| Boastful | | | | .75041 |
| Active | | .42559 | -.41897 | .35834 |
| Leisurely | -.49192 | .36099 | | |
| Defiant | .41410 | | | |
| Fearful | .75685 | | | |
| Playful | | .66118 | | .31643 |
| Overjoyed | | .74876 | | |
| Engaged in thought | | | | |
| Sluggish | | | .82002 | |
| Kindly | | .62754 | | |
| Sad | .78293 | | | |
| Skeptical | | | | |
| Egoistic | | | | .48394 |
| Energetic | | .53668 | -.45281 | .37121 |
| Nonchalant | | | | |
| Rebellious | .39328 | | | |
| Jittery | .56977 | | | |
| Witty | | .35145 | | .45756 |
| Pleased | -.38673 | .63998 | | |
| Intent | | | | |
| Tired | | | .86059 | |
| Warmhearted | | .74490 | | |
| Sorry | .81282 | | | |
| Suspicious | | | | |
| Self-centered | | | | |
| Vigorous | | .53331 | | .34012 |
| | | | | |
| Eigenvalue | 8.28255 | 4.62124 | 2.66596 | 1.74718 |
| Explanatory power | 23.7% | 13.2% | 7.6% | 5.0% |

<span style="text-align:right">**(continued next page)**</span>

| | Concentration | Skepticism | Aggression | Calmness |
|---|---|---|---|---|
| Angry | | | | |
| Clutched up | | | | |
| Carefree | | | | |
| Elated | | | | |
| Concentrating | .81037 | | | |
| Drowsy | | | | |
| Affectionate | | | | |
| Regretful | | | | |
| Dubious | | .37151 | | |
| Boastful | | | | |
| Active | .32250 | | | |
| Leisurely | | | | |
| Defiant | | | .54999 | |
| Fearful | | | | |
| Playful | | | | |
| Overjoyed | | | | |
| Engaged in thought | .73291 | | | |
| Sluggish | | | | |
| Kindly | | | | .34642 |
| Sad | | | | |
| Skeptical | | .80051 | | |
| Egoistic | | .37131 | .30627 | |
| Energetic | | | | |
| Nonchalant | | | | .50827 |
| Rebellious | | | .64894 | |
| Jittery | | | | -.32437 |
| Witty | | | | |
| Pleased | | | | |
| Intent | .46007 | | | .42215 |
| Tired | | | | |
| Warmhearted | | | | |
| Sorry | | | | |
| Suspicious | | .74648 | | |
| Self-centered | | | .68687 | |
| Vigorous | | | | |
| | | | | |
| Eigenvalue | 1.56477 | 1.20444 | 1.08666 | 1.04106 |
| Explanatory power | 4.5% | 3.4% | 3.1% | 3.0% |

**Table 6.2:** **Factor loadings, eigenvalues, and explanatory power of the mood factors in the eight-factor solution**

The first two factors are similar to those extracted in the two-factor solution. The third factor with its heavy loadings on variables like Drowsy, Sluggish and Tired can be named Fatigue. The fourth factor includes the active components of Positive affect and has therefore been called Surgency. Factor five can be interpreted as Concentration and factor six as Skepticism. Aggression is used to label factor seven, while factor eight constitutes a Calmness-factor. All factors, except the last-mentioned, have been reported and discussed in a study by Nowlis (1965).

It can be argued that in constructing the mood measure it would be just as good to use the Negative- and Positive-affect factors from the eight-factor solution, instead of the factors from the two-factor solution. To see if this would make any difference, an additional mood score was computed using the two first factors in the eight-factor solution. A correlation analysis was performed to determine to what extent the mood score from the eight-factor solution differed from the original one. The results showed a correlation of the two mood scores of 0.958, which means that it hardly matters if the mood score is computed from the factors in the two-factor solution or from the factors in the eight-factor solution. We also tried a one-factor solution, where positive factor scores indicated favorable moods, and negative factor scores indicated unfavorable moods. However, the correlation between the one-factor mood measure and the two-factor measure was as high as 0.9993, which means that the two measures give nearly identical results. Consequently, we decided to retain the original mood measure using the two-factor solution.

## 6.2. Knowledge score

As mentioned earlier several questions were particularly designed to measure the subject's level of knowledge about Norway. The subjects' answers to these questions were used as a basis for constructing a knowledge score. The questions and the computational procedure are presented below.

In the first question, the subjects were asked to give an estimate of the population in Norway:

1. What is the population of Norway? _____ million

The correct answer is 4.2 million. Here, subjects with estimates between 4 and 5 million were given a score of 2 points, while estimates outside the 4 to 5 million range, but between 2 and 8 million received 1 point. Subjects with estimates outside the 2 to 8 million range were given 0 points.

In the second question, the subjects were asked to name three Norwegian cities:

2. Name 3 Norwegian cities: _____

_____

_____

Here the subjects received 1 point for each correct city. No points were given for incorrect answers.

Question three concerned Norway's neighboring countries:

3. Norway shares borders
   with the following countries: _____

_____

_____

The correct answers are: Sweden, Finland, and the Soviet-Union. Each correct answer gave 1 point, while all other answers gave 0 points.

In question four, the subjects were asked to name the capital of Norway. The correct answer is Oslo. Some subjects misspelled the capital and answered Oslow, and this was considered a correct answer. Subjects who knew that the capital of Norway is Oslo (or Oslow) received 1 point, while all other subjects were given 0 points.

Question five concerned important industries in Norway:

5. Name the three most important industries in Norway, i.e. the
   industries with highest annual sales:

_____

_____

_____

According to the 1988 edition of the Statistical Yearbook of Norway, the main industries in Norway are, production and pipeline transport of crude petroleum and natural gas, electricity supply and industrial production where electricity is one of the main components, and wood/paper industry. All answers that specifically mentioned one of these industries received 1 point. Shipping used to be a major industry in Norway, but has declined in recent years. Some subjects suggested shipping as one of the three major industries, and although this is not entirely correct, the answer indicates that the subject has some knowledge about Norway as a shipping nation, and the subjects thus received 1 point for shipping. Banking and financial services is another major industry in Norway. During the last couple of years it has grown considerably both in volume and importance. Although banking is still not among the top three industries, it was accepted as a correct answer, and consequently received 1 point. The production and exports of Norwegian furniture have increased significantly in recent years. Furthermore, this is an industry that was given much attention in the Norway-film. Subjects who listed furniture as a major industry, therefore received 1 point. All other industries than the above-mentioned, received 0 points.

In question six, the subjects were asked to indicate which of ten persons are/were Norwegians. The correct answers are listed below:

1. Thor Heyerdahl: Norwegian scientist and explorer.
2. King Carl Gustav: The king of Sweden.
3. Julius Stenbakk: Imaginary person.
4. Edward Munch: Norwegian painter.
5. August Strindberg: Swedish author.
6. Helmut Kohl: Chancelor of West Germany.
7. Olof Palme: The assassinated prime minister of Sweden.
8. Henrik Ibsen: Norwegian author.
9. Roald Amundsen: Norwegian explorer.
10. Leif Ericson: Norwegian Viking explorer

Each correct answer gave 1 point, while each incorrect answer gave -1 point. As one can see there are five Norwegians among the ten persons. A random selection of names will thus give an expected score of 0 for this question. In appendix 3, the distributions of knowledge scores are shown for subjects that did not receive any information about Norway, as well as for those who watched the Norway-film.

## 6.3. Evaluations of Norway

The evaluations of Norway, constituted the dependent variables in all experiments. In the questionnaire the subjects were asked to evaluate 26 different aspects, and to determine if the experimental manipulations influenced the subjects' evaluations the following comparisons will be made:

1. A comparison between group-mean ratings for individual aspects. This comparison should make it possible to determine if the evaluations in one group are consistently higher than those made by subjects in another group.

2. A comparison of grand-mean ratings. By comparing the grand-mean of all evaluations, the problem of random fluctuations in the individual variables is expected to be eliminated, and any true difference between the groups will thus be easier to detect.

3. A comparison of aspects grouped together in summated scales. This comparison should establish if the differences relate to certain aspects of Norway, or if there are global differences present.

In constructing the scales, the variables were first grouped together in four different groups. All variables in the first group had something to do with the nature, peace, and quiet aspect of the Norwegian tourist product. The second group of variables were those that covered vacation activities, while the third included general aspects of Norway. The last group, consisted of the overall evaluation of Norway as a travel destination, as well as comparisons of Norway with other travel destinations.

After the variables had been divided into the different groups, four summated scales were computed by adding the subject's scores on the variables in each group together. Reliability and validity of the scales was assessed, and variables that had a negative impact on the statistical properties of the scales were excluded. The four scales in their final form, are presented below.

## Nature, peace and quiet-scale

| Items | α if item is deleted | Mean correlation with items in the scale | Mean correlation with items outside the scale |
|---|---|---|---|
| 1. The possibility to see and experience nature | 0.8928 | 0.43 | 0.39 |
| 5. The possibilities for hiking | 0.8087 | 0.63 | 0.56 |
| 7. The possibilities for a calm and peaceful stay | 0.8099 | 0.64 | 0.57 |
| 19. The safety as a tourist | 0.8298 | 0.57 | 0.46 |
| 20. The possibility to experience clean and undisturbed nature | 0.8034 | 0.64 | 0.53 |
| Mean correlations | | 0.58 | 0.50 |

Cronbach's α: 0.8581

**Table 6.3: The Nature, peace, and quiet-scale with its items and statistical properties**

As mentioned earlier the variables in this scale cover the nature, peace, and quiet aspects of the Norwegian tourist product. The reliability of the scale is measured by Cronbach's α. According to Nunnally (1978) an α of 0.7 or higher will be acceptable, which means that the α observed here should be very satisfactory. Notice that deletion of aspect 1, would increase the reliability. It was however decided to keep this variable for two reasons. Firstly, the variable is extremely important for an adequate coverage of the nature aspect and should therefore be included. Secondly, a Cronbach's α of 0.8581 indicates a reliable scale so that very little is gained by an increase to 0.8928.

Convergent and discriminant validity was measured by calculating mean correlations. A requirement for convergent validity is that the items in the scale are highly correlated, while the criterion for discriminant validity implies that the scale-items should not correlate substantially with items outside the scale. The necessary condition for convergent and discriminant validity will thus be that each variable should have a higher mean correlation with variables in the scales, than its mean correlation with variables outside the scale. Mean correlations are computed from the correlation matrix on page 91. Using the correlation coefficients in this matrix, the mean correlation between, for example item 1 and other variables in the scale was found to be (0.51+0.41+ 0.35+0.47)/4 = 0.43, while the mean correlation with variables outside the scale is (0.39+0.41+0.34+.... +0.37+0.42)/17 = 0.39. Note that all variables in the scale have high mean correlations with the other variables in the scale, and comparatively lower

correlations with the variables outside the scale. This indicates that the Nature, peace, and quiet-scale has convergent and discriminant validity.

The second scale came out as follows:

## Vacation activities-scale[1]

| Items | α if item is deleted | Mean correlation with items in the scale | Mean correlation with items outside the scale |
|---|---|---|---|
| 4. The swimming possibilities | 0.9241 | 0.51 | 0.49 |
| 6. Nightlife and entertainment | 0.9157 | 0.58 | 0.43 |
| 10. The weather | 0.9167 | 0.58 | 0.44 |
| 12. The possibilities to experience something new | 0.9207 | 0.53 | 0.42 |
| 13. The possibilities to eat well | 0.9103 | 0.66 | 0.51 |
| 17. Communications and transportations | 0.9148 | 0.60 | 0.50 |
| 18. The shopping possibilities | 0.9102 | 0.64 | 0.48 |
| 21. The possibilities for cultural experiences | 0.9167 | 0.58 | 0.44 |
| 22. Service and helpfulness | 0.9132 | 0.62 | 0.59 |
| | | | |
| Mean correlations | | 0.59 | 0.48 |

Cronbach's α: 0.9245

**Table 6.4: The Vacation activities-scale with its items and statistical properties**

This scale is very reliable with a Cronbach's α of 0.9245. Notice that all variables in the scale show high mean correlations with the other variables in the scale, and comparatively lower correlations with the variables outside the scale. This indicates convergent and discriminant validity. The third scale covered the general aspects of Norway and is presented below.

---

[1] Aspect 15: The possibilities to have a reasonably priced vacation in Norway and aspect 16: The possibilities to become physical fit during a vacation in Norway, conceptually belong to this scale. However, because of their negative impact on the reliability of the scale, the two items were excluded.

## General aspects-scale[2]

| Items | α if item is deleted | Mean correlation with items in the scale | Mean correlation with items outside the scale |
|---|---|---|---|
| 2. The health-care system | 0.7145 | 0.59 | 0.28 |
| 3. The educational system | 0.7155 | 0.58 | 0.31 |
| 8. Democracy and civil-rights | 0.7704 | 0.51 | 0.41 |
| 14. The unemployment-rate | 0.8293 | 0.42 | 0.35 |
| | | | |
| Mean correlations | | 0.52 | 0.34 |

Cronbach's α: 0.8072

**Table 6.5: The General aspects-scale with its items and statistical properties**

This scale too shows acceptable reliability as well as convergent and discriminant validity. The reliability of the scale could have been increased to an α of 0.8293 by an exclusion of item 14, but this would have meant that the scale consisted of only three items. Considering that the increase in Cronbach's α associated with the deletion of item 14 was rather marginal, it was decided to keep this variable in the scale. The last scale consisted of four items, and was named the Overall evaluation-scale:

---

[2]Aspect 9: The suicide-rate in Norway and aspect 11: The standard of living in Norway, conceptually belong to this scale. However, aspect 9 had a very negative impact on the reliability of the scale, while aspect 11 had higher correlations with items outside the scale, than it had with the other items in the scale. The two variables were thus excluded from the General aspects-scale.

## Overall evaluation-scale

| Items | α if item is deleted | Mean correlation with items in the scale | Mean correlation with items outside the scale |
|---|---|---|---|
| 23. Overall, I would rate Norway as a travel destination as | 0.8989 | 0.74 | 0.59 |
| 24. In comparison with other Scandinavian countries, Norway as a travel destination is. | 0.9100 | 0.70 | 0.53 |
| 25. In comparison with other European countries, Norway as a travel destination is | 0.8683 | 0.78 | 0.48 |
| 26. In comparison with travel-destinations in general, Norway as a travel destination is | 0.8834 | 0.76 | 0.50 |
| Mean correlations | | 0.74 | 0.53 |

Cronbach's α: 0.9163

**Table 6.6: The Overall evaluation-scale with its items and statistical properties**

This scale shows acceptable values for both reliability and validity. The Cronbach's α of 0.9163 indicates that the scale is very reliable, and all variables in the scale show considerably higher mean correlations with other variables in the scale, than their mean correlations with the variables outside the scale. We can thus conclude that the scale appears to be both reliable and valid.

## Table 6.7: Correlation-matrix for the items in the four scales

| Items | | 1 | 5 | 7 | 19 | 20 | 4 | 6 | 10 | 12 | 13 | 17 | 18 | 21 | 22 | 2 | 3 | 8 | 14 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nature, | 1 | . | | | | | | | | | | | | | | | | | | | | | |
| peace, | 5 | 0.51 | . | | | | | | | | | | | | | | | | | | | | |
| and quiet- | 7 | 0.41 | 0.71 | . | | | | | | | | | | | | | | | | | | | |
| scale | 19 | 0.35 | 0.61 | 0.66 | . | | | | | | | | | | | | | | | | | | |
| | 20 | 0.47 | 0.68 | 0.76 | 0.67 | . | | | | | | | | | | | | | | | | | |
| | 4 | 0.39 | 0.7 | 0.59 | 0.51 | 0.56 | . | | | | | | | | | | | | | | | | |
| | 6 | 0.41 | 0.64 | 0.58 | 0.35 | 0.46 | 0.47 | . | | | | | | | | | | | | | | | |
| | 10 | 0.34 | 0.57 | 0.59 | 0.43 | 0.59 | 0.53 | 0.62 | . | | | | | | | | | | | | | | |
| Vacation | 12 | 0.36 | 0.51 | 0.54 | 0.36 | 0.45 | 0.43 | 0.51 | 0.43 | . | | | | | | | | | | | | | |
| activities- | 13 | 0.47 | 0.65 | 0.66 | 0.46 | 0.60 | 0.52 | 0.65 | 0.62 | 0.69 | . | | | | | | | | | | | | |
| scale | 17 | 0.49 | 0.61 | 0.58 | 0.42 | 0.60 | 0.52 | 0.61 | 0.60 | 0.45 | 0.66 | . | | | | | | | | | | | |
| | 18 | 0.39 | 0.60 | 0.65 | 0.45 | 0.57 | 0.53 | 0.69 | 0.69 | 0.56 | 0.74 | 0.71 | . | | | | | | | | | | |
| | 21 | 0.34 | 0.57 | 0.56 | 0.4 | 0.60 | 0.45 | 0.52 | 0.49 | 0.68 | 0.68 | 0.58 | 0.59 | . | | | | | | | | | |
| | 22 | 0.48 | 0.67 | 0.73 | 0.64 | 0.71 | 0.60 | 0.62 | 0.63 | 0.49 | 0.69 | 0.63 | 0.62 | 0.63 | . | | | | | | | | |
| General | 2 | 0.30 | 0.44 | 0.36 | 0.43 | 0.31 | 0.36 | 0.25 | 0.14* | 0.17** | 0.19** | 0.29 | 0.22 | 0.12* | 0.33 | . | | | | | | | |
| aspects- | 3 | 0.28 | 0.41 | 0.37 | 0.45 | 0.33 | 0.41 | 0.21 | 0.12* | 0.24 | 0.25 | 0.35 | 0.25 | 0.22 | 0.39 | 0.73 | . | | | | | | |
| scale | 8 | 0.32 | 0.47 | 0.45 | 0.46 | 0.44 | 0.46 | 0.33 | 0.33 | 0.33 | 0.38 | 0.40 | 0.38 | 0.35 | 0.45 | 0.58 | 0.58 | . | | | | | |
| | 14 | 0.33 | 0.37 | 0.47 | 0.52 | 0.45 | 0.30 | 0.22 | 0.23 | 0.24 | 0.34 | 0.33 | 0.34 | 0.29 | 0.47 | 0.45 | 0.44 | 0.36 | . | | | | |
| Overall | 23 | 0.57 | 0.65 | 0.65 | 0.52 | 0.68 | 0.56 | 0.62 | 0.64 | 0.63 | 0.73 | 0.71 | 0.69 | 0.68 | 0.75 | 0.29 | 0.35 | 0.49 | 0.40 | . | | | |
| evaluation- | 24 | 0.39 | 0.61 | 0.65 | 0.56 | 0.61 | 0.51 | 0.53 | 0.54 | 0.56 | 0.65 | 0.53 | 0.56 | 0.57 | 0.67 | 0.35 | 0.38 | 0.46 | 0.35 | 0.70 | . | | |
| scale | 25 | 0.37 | 0.54 | 0.57 | 0.44 | 0.51 | 0.47 | 0.54 | 0.58 | 0.53 | 0.62 | 0.55 | 0.56 | 0.51 | 0.65 | 0.23 | 0.32 | 0.42 | 0.28 | 0.74 | 0.75 | . | |
| | 26 | 0.42 | 0.55 | 0.59 | 0.44 | 0.56 | 0.52 | 0.52 | 0.64 | 0.52 | 0.64 | 0.59 | 0.57 | 0.54 | 0.66 | 0.23 | 0.32 | 0.42 | 0.32 | 0.77 | 0.65 | 0.85 | . |

N=239

* Indicates that correlation coefficient is significant at α <0.05

** Indicates that correlation coefficient is significant at α <0.01

All other correlation coefficient are significant at α <0.001

## 6.4. Implications

This chapter has been devoted to measurement issues. We started the chapter by explaining how the mood measure was designed. Here it was established that a factor-analytic approach would be the most appropriate, and the results from both a two-factor solution as well as from an eight-factor solution were presented. The actual mood measure was designed by subtracting the factor score on the Negative affect factor from that of the Positive affect factor. This was done for all subjects individually.

The second section of this chapter was concerned with the computational procedure for the knowledge score. This score was used as an estimate for the subjects' familiarity with Norway, and the score was computed from the answers to a series of questions especially designed to measure the subjects' level of knowledge about Norway.

The evaluations about Norway constitute the dependent variables in all experiments, and in section 6.3, it was discussed how the evaluations in the various experimental groups could be compared. We pointed to three methods of comparisons. The first is to compare the individual aspects, the second to compare the grand mean of all evaluations, while the last method is to group the aspects together in summated scales. The procedure used for constructing and testing these scales was discussed, and we also gave a presentation of the four scales with their items and their statistical properties.

# Part IV

# EMPIRICAL

# ANALYSIS

# CHAPTER 7

# Experiment 1

The focus in this experiment was on how a pure mood induction procedure, would influence the subjects' evaluations of different aspects of Norway. Three groups were initially included in the experiment:

1. Neutral mood. This group was meant to function as a control group. The subjects in group 1, watched the film "Forces and moments." (n=16)

2. Positive mood. "The best of candid camera" was used to induce a good mood. (n=16)

3. Negative mood. To induce a negative mood, the film "Night and fog", was shown. (n=17)

The experiment took place in a classroom setting. After the subjects had been seated, the following instructions were read to them:

*"First of all, I would like to thank you for participating in this experiment. My name is Morten Heide, and I am a visiting scholar from Norway. In this experiment you will be asked to complete a questionnaire, where most of the questions are about Norway as a travel destination.*

*But, first I would like you to watch about 15 minutes of a film we are planning to use in another study, next term. Before we decide whether or not to use this film in the study, we want to find out people's general reaction to the film, and this is the reason why I want you to watch it.*

*As you watch, don't try to memorize anything from the film, just watch it. In the questionnaire you be asked about your impression of the film."*

The subjects were told that the film was pretested for use in another study, so that they would not be aware of the mood manipulation taking place. This is a procedure which has previously been used successfully by Isen et. al. (1987). We talked with some of the subjects after the experiment, and none of them had suspected any connection between the film and the evaluation task. Immediately after the film, questionnaires were handed out, and the following instructions read aloud:

*"Please answer all questions in the questionnaire, as complete as possible. Begin with the first page, then the second and so on. When you have made sure that all questions are answered, please put the questionnaire in this box.*

*After you have done this, please come up to my desk to pick up a yellow sheet where your participation in this experiment is confirmed. You are then free to leave. Thank you."*

The questionnaire is presented in appendix 2. It consists of the following parts:

1. Questions about gender and ethnic background

2. Nowlis' (1965) Mood Adjective Check List

3. Evaluation of Norway and another travel destination:
   25% of the respondents were asked to evaluate Sweden
   25% Germany
   25% France, and
   25% Europe in general
   Questions to determine if the subject had been to Norway or the other destination.

4. Three personality measurement scales:
   Scheier and Carver's (1985) "Life Orientation Test"
   Leary et. al.'s (1986) "Objectivism Scale", and
   Larsen's (1984) "The Affect Intensity Measure Simplified"

The evaluations of the other destination and the personality measurement scales, were included for purposes other than this dissertation and will consequently not be discussed any further.

5. A series of questions aimed at estimating the subject's knowledge about Norway. The answers were used for computing the knowledge score. The computational procedure has been presented in chapter 6.

6. Isen et. al.'s (1987) manipulation check. Four of the scales in this check were intended only as filler items (refreshed vs. tired, calm vs. anxious, alert vs. unaware, and amused vs. sober). The scale "The film put me in a.... positive vs. negative mood" represented the manipulation check. There were several reasons why this manipulation check was employed. The questions in the manipulation check concerned the film, and thus bolstered the impression that the film was pretested for use in another study. Secondly, Isen et. al. (1987) used similar films, in their study. By including their manipulation check in the questionnaire, a chance for comparison of the films' effects on mood was established. Thirdly, in experiment 4 the subjects watched two films. The Mood Adjective Check List would only register the combined effect of the films, while a manipulation check for each film would capture the isolated effect of each film. In experiment 4 it was thus decided to use Isen et. al.'s (1987) manipulation check as a pseudo mood measure. However, before this manipulation check could be used, it was necessary to estimate how well the manipulation check corresponded with the Mood Adjective Check List. We will return to this issue in chapter 10.

## 7.1. Effects on mood (manipulation check)

All the films had the expected effects on reported mood. The mean mood scores in the different groups are presented below.
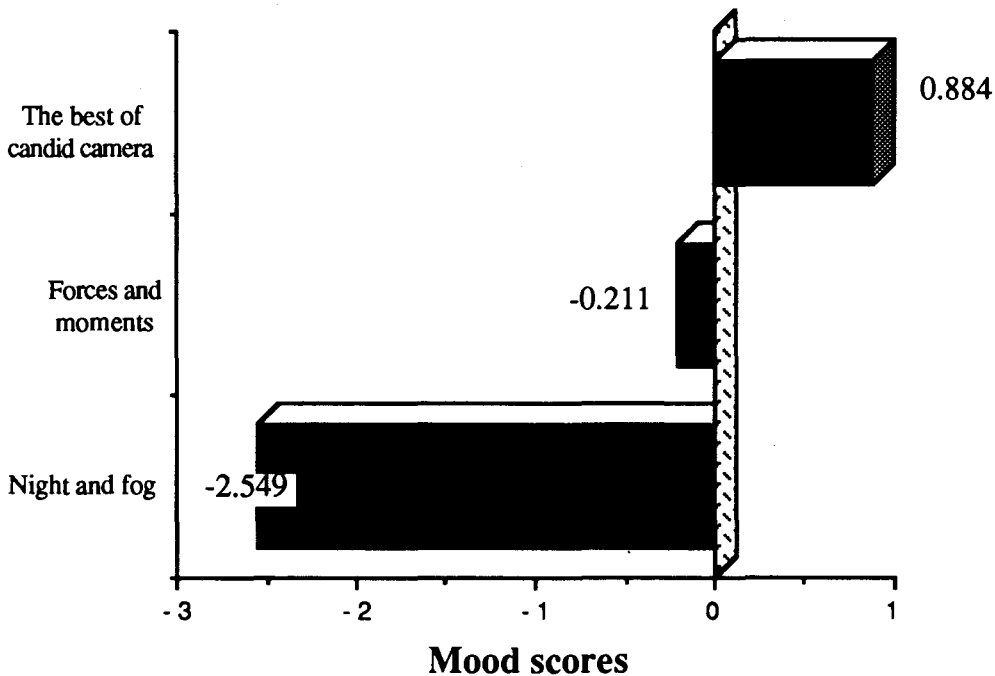


Figure 7.1: Group-mean mood scores for the three different film groups

As we can see from figure 7.1. "The best of candid camera" had a positive mood inducing effect on its viewers. The film "Forces and moments" was intended to have no effect on mood. As figure 7.1. illustrates, the mean mood score in the neutral group was slightly negative, but this score is not significantly different from zero, at $\alpha < 0.05$. As anticipated the film depicting Nazi concentration camps, "Night and fog" had a powerful negative effect on the viewers' reported mood states. All differences between the three groups on reported mood are significant at $\alpha < 0.05$.

To further clarify the effects of the films, the eight-factor mood scores were computed for the three film groups. The results are presented below. For the reader's convenience both a graphic illustration and the actual factor loadings are presented.
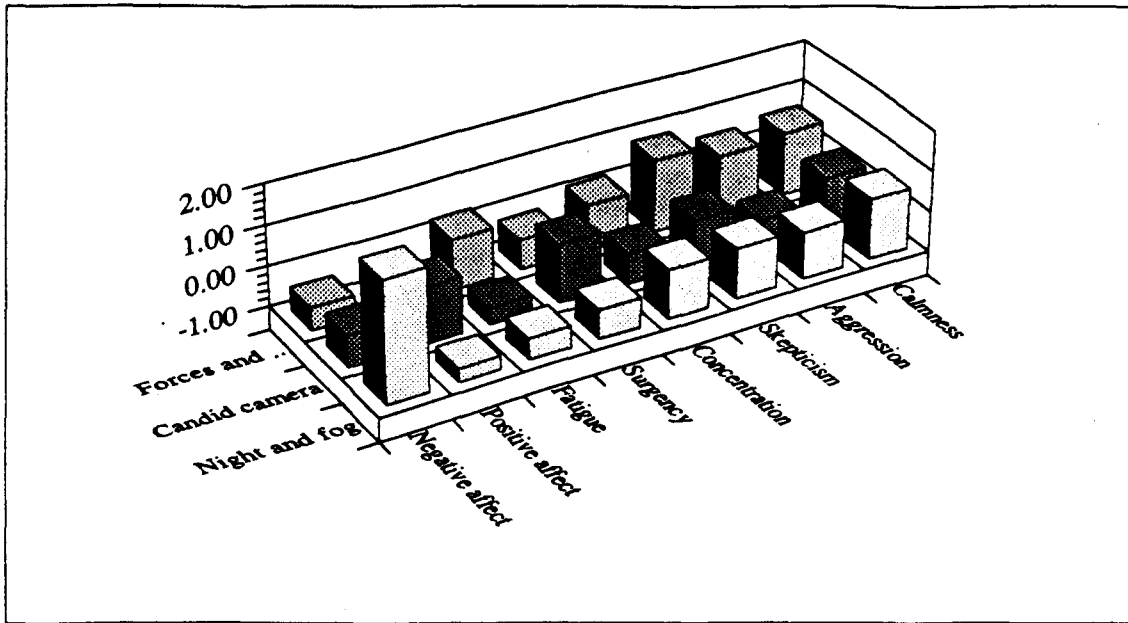
| Forces and moments | | Candid camera | | Night and fog | |
|---|---|---|---|---|---|
| | Mean factor-scores | | Mean factor-scores | | Mean factor-scores |
| Skepticism | 0.785 | Surgency | 0.454 | Negative affect | 2.004 |
| Calmness | 0.571 | Positive affect | 0.390 | Calmness | 0.501 |
| Aggression | 0.456 | Calmness | 0.211 | Skepticism | 0.259 |
| Fatigue | 0.249 | Skepticism | 0.133 | Concentration | 0.243 |
| Concentration | 0.120 | Negative affect | -0.211 | Aggression | 0.159 |
| Surgency | -0.269 | Concentration | -0.250 | Surgency | -0.283 |
| Negative affect | -0.440 | Aggression | -0.357 | Fatigue | -0.485 |
| Positive affect | -0.451 | Fatigue | -0.608 | Positive affect | -0.659 |

**Figure 7.2: The effects of the films on the eight mood factors**

As shown in figure 7.2, the film "Forces and moments" scored high on Skepticism and Calmness. That the mood inducing properties of the film is weak, is confirmed by the negative loadings on the main factors; Negative- and Positive affect. The viewers of "The best of candid camera" have high loadings on Surgency and Positive affect and low loadings on Aggression and Fatigue. The film seems, in other words, to have a refreshing and up-lifting effect on its viewers. The last film "Night and fog" has only one powerful factor, Negative affect. Notice the low loading on Fatigue, which means that the film "Night and fog" makes its viewers very alert.

In the questionnaire, Isen et. al.'s (1987) manipulation check was included. This provides an opportunity to compare the effects on mood with Isen et. al.'s (1987) results. In this study 5 minutes viewing of the film "Gag real" was used for positive mood induction. This film consists of bloopers from television shows. For neutral control condition 5 minutes from the math-instruction film "Area under a curve" was shown, while the negative mood group watched 5 minutes from the same film as in this study; "Night and fog". A comparison of the two studies is given below:

**Mean mood ratings as measured by
Isen et. al.'s manipulation check**

| Groups | Isen et. al. (1987) | Experiment 1 |
|---|---|---|
| Comedy | 4.89 (n=11) | 6.44 (n=16) |
| Neutral | 4.10 (n=10) | 3.81 (n=16) |
| Negative | 2.48 (n=12) | 2.25 (n=17) |

7 is maximum (the film put me in a very positive mood)[1]
4 is the neutral mid-point of the scale
1 is minimum (the film put me in a very negative mood)

**Table 7.1:** A comparison between the effect of the manipulations in experiment 1 with Isen et. al.'s (1987) study

It seems that the comedy used in experiment 1 had a greater positive effect on mood, than was the case with Isen et. al.'s (1987) manipulation. This may be due to the fact that different comedies were used in the two studies. A more likely reason however, is the difference in exposure time. As explained earlier, Isen et. al. (1987) used 5 minute segments, while we used 13 minutes. It is likely that the comedy in experiment 1 had greater effect because of the additional minutes. This explanation is bolstered by the fact that the neutral group in experiment 1 reported lower mood than Isen et. al. (1987) neutral control group. It may be that the extra time makes the subjects bored. For the last group too, the reported effect of the film was more powerful in our study.

[1]Isen et. al. (1987) actually used a reversed order on the response scale. To make a comparison possible, the scores from this study have been reversed in the table above.

## 7.2. Hypotheses

The following hypotheses were formulated and tested in experiment 1:

> Hypothesis 1.1
> The subjects in the positive mood group will generally give more favorable evaluations of the different aspects of Norway, than will be the case for the neutral control group.

The theoretical basis for hypothesis 1.1, is the mood-biased judgement hypothesis. As discussed in chapter 3, this hypothesis predicts mood-congruent effects for positive mood. When it comes to positive mood, the mood-biased judgement hypothesis has been supported for a number of studies. However, as discussed in chapter 3, several studies point to asymmetric effects between positive and negative moods. It is thus difficult to predict what will happen in the negative mood group.

> Hypothesis 1.2
> Subjects who have a high level of knowledge about Norway, will be less likely to be influenced by their current mood state in the evaluations they make about Norway.

As we remember from chapter 3, previous research (Srull, 1984) points to a negative correlation between mood effects and familiarity. This research constitutes the basis for hypothesis 1.2.

## 7.3. Hypotheses testing

As was discussed earlier, the first hypothesis, 1.1., predicted mood-congruent effects for positive mood with regard to the subjects' evaluations. When it comes to negative mood, no certain predictions were made. As discussed in chapter 6, there are several different ways of testing hypothesis 1.1. One possibility is to look at the group-mean ratings in the various groups. In the figure below the group-means from the neutral group (Forces and moments) are compared with those from the positive mood group (The best of candid camera).
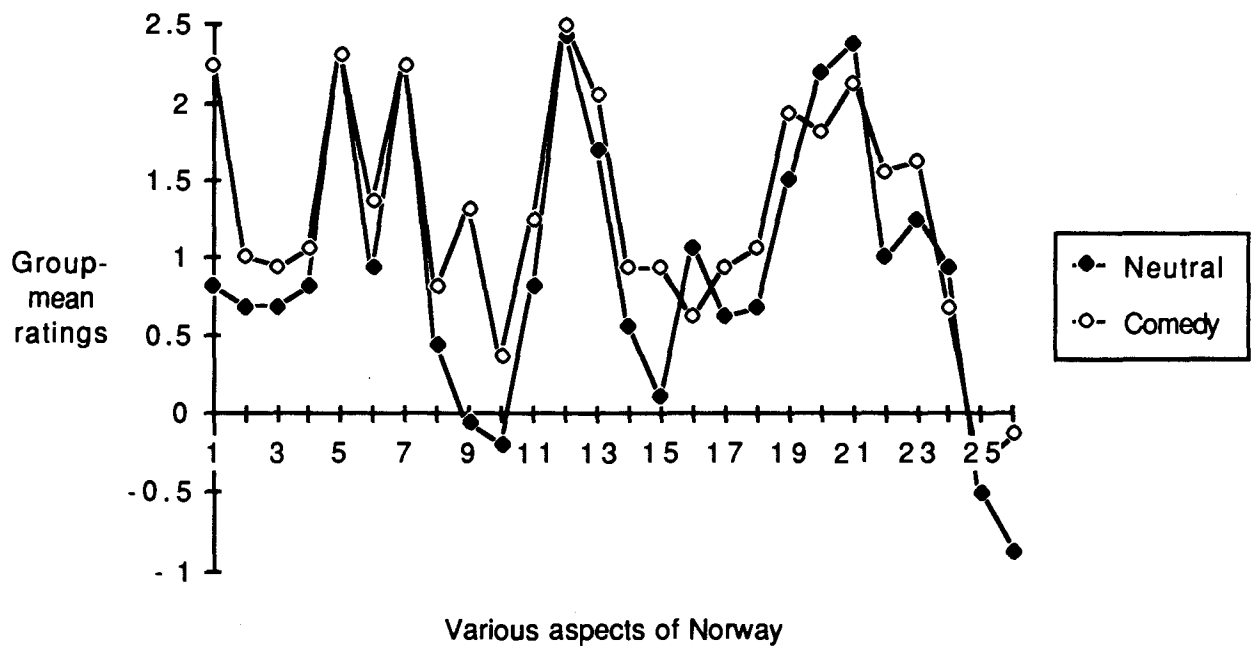
**Figure 7.3: A comparison of evaluations in the positive mood group vs. the neutral mood control group**

On the X-axis we find the various aspects of Norway which the subjects were asked to evaluate. These aspects are listed below:

1. The possibility to see and experience nature in Norway is.....
2. The health-care system in Norway is.....
3. The educational system in Norway is.....
4. The swimming possibilities in Norway are.....
5. The possibilities for hiking in Norway are.....
6. The possibilities for nightlife and entertainment in Norway are.....
7. The possibilities for a calm and peaceful stay in Norway are.....
8. Democracy and civil-rights in Norway are.....
9. The suicide-rate in Norway is.....
10. The weather in Norway is.....
11. The standard of living in Norway is.....
12. The possibilities to experience something new during a vacation in Norway are.....
13. The possibilities to eat well during a vacation in Norway are..
14. The unemployment-rate in Norway is.....
15. The possibilities to have a reasonably priced vacation in Norway are.....

16. The possibilities to become physically fit during a vacation in Norway are.....

17. Communications and transportations in Norway are.....

18. The shopping possibilities in Norway are.....

19. The safety as a tourist in Norway is.....

20. The possibility to experience clean and undisturbed nature in Norway is.....

21. The possibilities for cultural experiences during a vacation in Norway are.....

22. Service and helpfulness in Norway is.....

23. Overall, I would rate Norway as a travel destination as.....

24. In comparison with other Scandinavian countries, Norway as a travel destination is.....

25. In comparison with other European countries, Norway as a travel destination is.....

26. In comparison with travel-destinations in general, Norway as a travel destination is.....

For each aspect, the subjects were asked to indicate his/her answer by circling the appropriate number on the following response-scale:

| very poor | | | | | | very good |
|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 |

A visual inspection of figure 7.3 indicates that the evaluations seem to be generally higher in the positive mood (comedy) group. Of the 26 evaluations, 20 are highest in the comedy group, while only 4 (#16, #20, #21 and #24) are higher in the neutral group. For the remaining 2 evaluations, the group-means are identical in the two groups. Because of the relatively low number of participants (16 in each group), only one of the evaluations (#1) shows significant differences (p=0.005) between the groups. It is however worth noticing that this difference is in a mood-congruent direction.

A problem in using individual variables as basis for comparison is the amount of random error in each of them. This problem can be overcome by computing the mean across all evaluations, and comparing this grand mean for the two groups. A two-sample T-test gave the following results:

```
------------------------------T-TEST------------------------------
```

Variable

| MEAN OF ALL EVALUATIONS | Number of Cases | Mean | Standard Deviation | Standard Error |
|---|---|---|---|---|
| Neutral | 16 | .9447 | .338 | .084 |
| Comedy | 16 | 1.2813 | .494 | .123 |

| | | * Pooled Variance Estimate | | | | * Separate Variance Estimate | | |
|---|---|---|---|---|---|---|---|---|
| F Value | 2-tail Prob. | * t Value | Degrees of Freedom | 2-tail Prob. | * t Value | Degrees of Freedom | 2-tail Prob. |
| 2.14 | .153 | * -2.25 | 30 | .032 | * -2.25 | 26.51 | .033 |

**Table 7.2:   Output from T-test between the mean of all evaluations in the positive mood group vs. the neutral control group**

It can be argued that the ordinal type response-scale used in experiment 1, does not satisfy the criteria for using a parametric test like the two-sample T-test. It was therefore decided to supplement the T-test with the non-parametric Mann-Whitney test. The results from this second analysis showed a difference between the two groups with a 2-tailed P of 0.030.

By calculating the grand mean, random fluctuations for the individual variables are eliminated, and we can see that there is a significant difference ($\alpha < 0.05$) between the two groups. The results from the above-mentioned analyses clearly support hypothesis 1.1.

Another way of testing the hypothesis is to look at the evaluations as an approximate binomial series. In other words, what is the probability that at least 20 out of 24 evaluations (i.e. the 24 evaluations where the group-means differ) are highest in the comedy-group, just out of pure coincidence. The results from running a non-parametric sign test shows that the 2-tail probability is 0.0015 if the two groups were drawn from the same population. In a binomial series, there is a requirement that the variables should be independent of one another. In experiment 1, some of the

evaluation-variables are correlated, and this violates the independence-assumption. Exactly how this problem will influence the probability is difficult to say, but it is likely that it will increase the probability somewhat.

A third way of testing hypothesis 1.1. is to group the related evaluations together by constructing summated scales. In chapter 6, we presented the four scales and their statistical properties. To determine whether the scores on the various scales differed in the two groups, both two sample T-tests as well as Mann-Whitney tests were run. The results are presented below:

| Scale | Group means neutral | Group means comedy | Sign. Two sample T-test | Sign. Mann-Whitney test |
|---|---|---|---|---|
| Nature, peace and quiet | 9.06 | 10.56 | 0.269 | 0.218 |
| Vacation activities | 10.38 | 13.06 | 0.072 | 0.140 |
| General aspects | 2.38 | 3.69 | 0.238 | 0.164 |
| Overall evaluation | 0.81 | 1.88 | 0.362 | 0.217 |

Table 7.3: Results from T-tests and Mann-Whitney tests of differences in scale-scores for the positive mood group vs. the neutral control group

All scales show higher scores for the comedy group. This indicates mood-congruent evaluation effects, and therefore supports hypothesis 1.1. However, none of the differences are significant at $\alpha < 0.05$. A look at the grand mean, i.e. the average of all evaluations, shows a significant difference between the two groups. However, when one breaks up this average into different scales, the differences between the two groups become less clear. In other words, there is little doubt that there is a mood bias in the evaluations, but this bias is not strong enough to be significantly detected when we look at the different components in isolation.

To sum up, we can conclude that there is clear support for hypothesis 1.1. However, the differences in evaluations between the comedy- and the neutral group were not as strong as anticipated.

Because of the widely reported asymmetry between the effects of positive and negative moods, hypothesis 1.1. does not predict any mood-congruent evaluation effects for negative moods. Still it will be interesting to compare the results from the negative (Night and fog) group with those of the neutral control group. The group-mean evaluations are presented below:
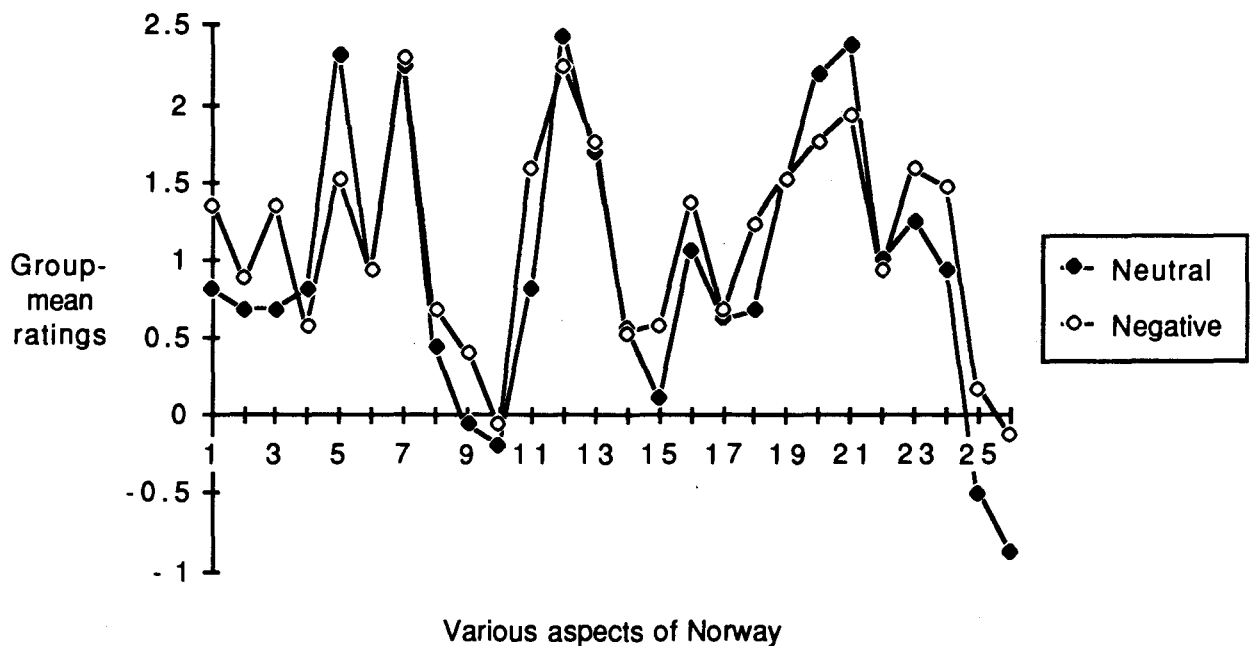


Figure 7.4: A comparison of evaluations in the negative mood group vs. the neutral mood control group

Although the difference is less clear than was the case with the positive mood group, it seems that the evaluations in the negative groups are generally higher than in the neutral group. Of the 26 aspects, 19 are evaluated highest in the negative group, while 7 are highest in the neutral control group. If we consider the evaluations as an approximate binomial series, a non-parametric sign test shows that the 2-tail probability that at least 19 out of 26 evaluations should be higher in one of the groups is 0.0310, if the two groups were drawn from the same population. But, as we have mentioned earlier some of the evaluation-variables are correlated, and this undoubtedly violates the independence-assumption for binomial series.

None of the differences between the two groups were significant. The grand mean, i.e. the average of all evaluations, was higher in the negative group (1.13 as opposed to 0.95 in the neutral group), but this difference was not significant either. A comparison of the four scales gave the same results. None of the differences were significant. We can thus conclude that although there seems to be a discongruent mood effect for negative moods, this effect is by no means significant.

In hypothesis 1.2. we predicted a negative correlation between knowledge about Norway and mood effects. As stated in this hypothesis, we expect to find that subjects who have a high level of knowledge about Norway, will be less likely to be influenced by their current mood state in the evaluations they make about Norway. To test the hypothesis a variance analysis was performed, using the MANOVA procedure in SPSSX.

******ANALYSIS OF VARIANCE--NUMBER 1******

Tests of Significance for MEAN OF ALL EVALUATIONS using UNIQUE sums of squares

| Source of Variation | SS | DF | MS | F | Sig of F |
|---|---|---|---|---|---|
| WITHIN CELLS | 10.48 | 46 | .23 | | |
| BETWEEN GROUPS[2] | .91 | 2 | .45 | 1.99 | .148 |

**Table 7.4: Output from MANOVA analysis aimed at explaining variations in evaluations by group-differences**

The first analysis was included to see how much of the variance in the mean of all evaluations could be explained by differences between the groups. As we have discussed earlier there was no significant difference between the negative mood group and the neutral control group. This results in a non-significant (0.148) between-groups difference in the MANOVA output. The next design uses the knowledge score as a covariate to see how much of the variance in the grand mean can be explained by differences in knowledge about Norway.

---

[2] All subjects from the three groups, i.e. neutral, positive, and negative mood, are included.

\* \* \* \* \* \* A N A L Y S I S  O F  V A R I A N C E -- NUMBER  2 \* \* \* \* \* \*

Tests of Significance for MEAN OF ALL EVALUATIONS using UNIQUE sums of squares

| Source of Variation | SS | DF | MS | F | Sig of F |
|---|---|---|---|---|---|
| WITHIN CELLS | 10.46 | 45 | .23 | | |
| REGRESSION | .03 | 1 | .03 | .11 | .739 |
| BETWEEN GROUPS | .93 | 2 | .47 | 2.01 | .146 |

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Regression analysis for WITHIN CELLS error term
--- Individual Univariate .9500 confidence intervals
Dependent variable .. MEAN OF ALL EVALUATIONS

| COVARIATE | B | Beta | Std. Err. | t-value | Sig. of t |
|---|---|---|---|---|---|
| KNOWLEDGE SCORE | .01122 | .05001 | .033 | .336 | .739 |

**Table 7.5: Output from MANOVA analysis aimed at explaining variations in evaluations by group-differences and the knowledge score as a covariate**

Here the knowledge score has been used as a covariate to explain the variation in the grand mean. It is obvious from the output above, that knowledge score does not have any significant explanatory power. This is indicated by the low t-value of the regression coefficient for the knowledge score. The t-value is only 0.336 which makes it insignificant (p=0.739).

A third analysis of variance was included to see if the interaction between group and knowledge score could explain a significant part of the variance in the mean of all evaluations. The output from this analysis is presented below.

\* \* \* \* \* \* A N A L Y S I S   O F   V A R I A N C E -- NUMBER 3 \* \* \* \* \* \*

Tests of Significance for MEAN OF ALL EVALUATIONS using UNIQUE sums of squares

| Source of Variation | SS | DF | MS | F | Sig of F |
|---|---|---|---|---|---|
| WITHIN+RESIDUAL | 10.21 | 44 | .23 | | |
| GROUP | .76 | 2 | .38 | 1.64 | .205 |
| GROUP BY | | | | | |
| KNOWLEDGE SCORE | .27 | 2 | .14 | .59 | .558 |

**Table 7.6: Output from MANOVA analysis aimed at explaining variations in evaluations by group-differences and the interaction by group and knowledge score**

The interaction term between group and knowledge score is on the last line (group by knowledge score). As we can see the F-value for the interaction term is only 0.59 and definitely not significant (p=0.558). The analyses show that the knowledge score does not explain any significant part of the variation in the mean of all evaluations, neither as a covariate nor in interaction with group. This means that there is little support for hypothesis 1.2. Thus, our prediction that subjects who have a high level of knowledge about Norway would be less likely to be influenced by their current mood states in their evaluations, was not confirmed. In a later section we will discuss possible reasons why hypothesis 1.2. was not supported.

## 7.4. Discussion

As hypothesized we found evidence of a mood-congruent evaluation bias for the positive mood group. As regards negative mood, there were indications of a discongruent effect. As discussed earlier asymmetric effects between positive- and negative moods are well documented in the literature. Below are some possible explanations why negative mood in this experiment did not influence evaluations in a mood-congruent direction. References to the literature are given for those explanations that are based on theory.

## Questionnaire terminates mood

It may be that the subjects got so busy filling out the questionnaire, that this task helped them get rid of their unpleasant feelings. To investigate this possibility, we looked at the evaluations of the other destinations. As one can see from appendix 2, these evaluations are made further down in the questionnaire. It was found that the mood effects were much smaller for these evaluations, and this indicates that the effect of the film had diminished by this time.

## Self-control

Carver and Scheier (1982) discuss the concept of human self-control in relation to social behavior. It is possible that there is a control-mechanism that permits the subjects to make their evaluations without being affected by their negative mood states.

## Self-gratification

By thinking positive, one can get rid of negative feelings. In other words, giving higher evaluations of Norway may be a way of terminating the negative mood state. Similar results are found in research concerning mood effects on helping behavior.

## Strong stereotype

Even though there are differences between the groups, the pattern observed is very much the same for all three groups. This may indicate that there exists a clear stereotypical perception of "Norway as a travel destination", and that this stereotype, not the subjects moods, will govern the evaluations. This possible explanation will be elaborated on later in this chapter.

## Learned socialization

Already as children we are taught not to be influenced by negative moods. In a study of helping behavior, Cialdini and Kenrick (1976) found that older children, but not younger ones, were more helpful when in a sad mood compared to children in a neutral mood. It may be that a similar socialization effect takes place in the negative mood group in experiment 1.

No attribution-link between mood state and the evaluation of Norway

According to Schwarz and Clore (1983) people are more motivated to seek explanations for negative than for positive moods because most people experience negative moods as deviating from their usually positive feelings. The subjects will undoubtedly know that their negative mood states are caused by the film which has nothing to do with Norway, and therefore not attribute their mood state to the evaluation task.

The subjects are students

Students are trained to be objective evaluators. It may be that the subjects in their gloomy mood state, will interpret the questionnaire task as an exam like situation. If so, their strive for objectivity will probably be even greater.

Specific evaluations

The evaluations may be so specific that there is no room for mood effects.

Autonomic arousal

Clark (1982) raises the issue of autonomic arousal. It may be that it is not the valence of the mood that counts, but rather arousal itself. In other words, if subjects are aroused (either negatively or positively) this will make them more active and increase their cognitive activity, which in turn may bias their evaluations in an upward direction.

Empathy effect

The film "Night and fog" showed European prisoners being tortured and murdered by the Nazis. Among the victims of the Nazis, several hundreds were Norwegians. Although nothing was mentioned about Norway or Norwegian prisoners in the film, it may be that the film caused a feeling of empathy among the American viewers, and that this empathy effect biased the evaluations upwards. To check for this last explanation, a fourth film was introduced.

The film "But, Jack was a good driver" has teen-suicide as its theme, and because it exclusively discusses the problem of teen-suicide in the U.S., there should be no danger of any empathy effect vis-á-vis Norway. Although the film was intended to induce a negative mood, the mood inducing properties were not expected to be as powerful as for "Night and fog". The film's effect on mood compared with that of the other films is shown below.
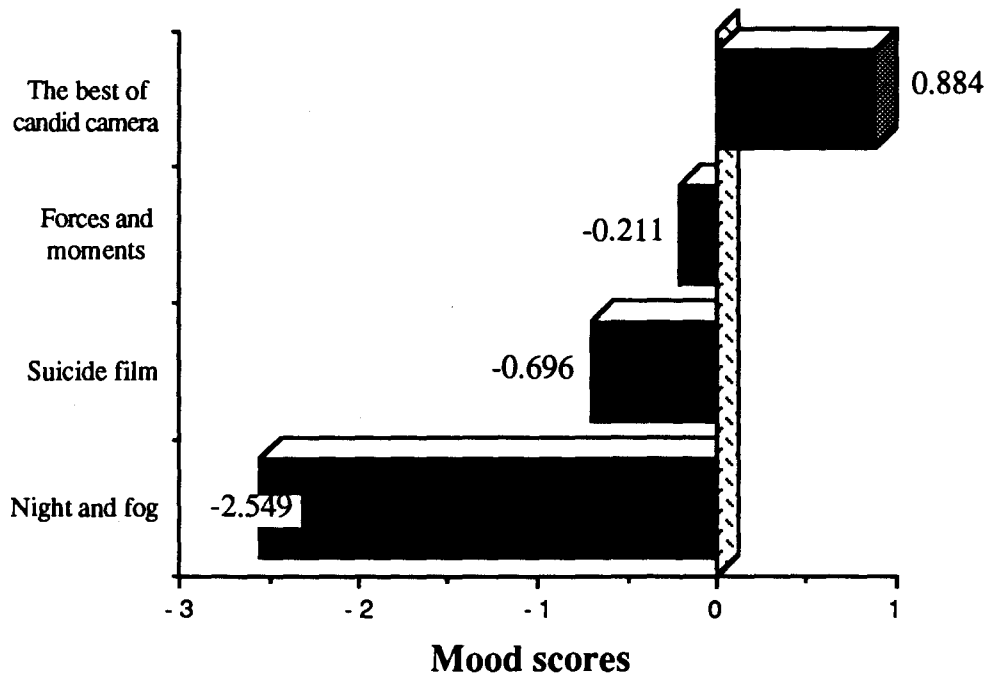
**Figure 7.5: Group-mean mood scores for all four film groups**

As anticipated, the mean mood score among the 16 subjects who watched the suicide-film was negative, but higher than for "Night and fog". The difference in mood score is significant (at $\alpha<0.05$) between the suicide-film and all groups except the neutral control group. Regarding the evaluations, the following comparisons can be made between the neutral group and the suicide-film group:

Various aspects of Norway
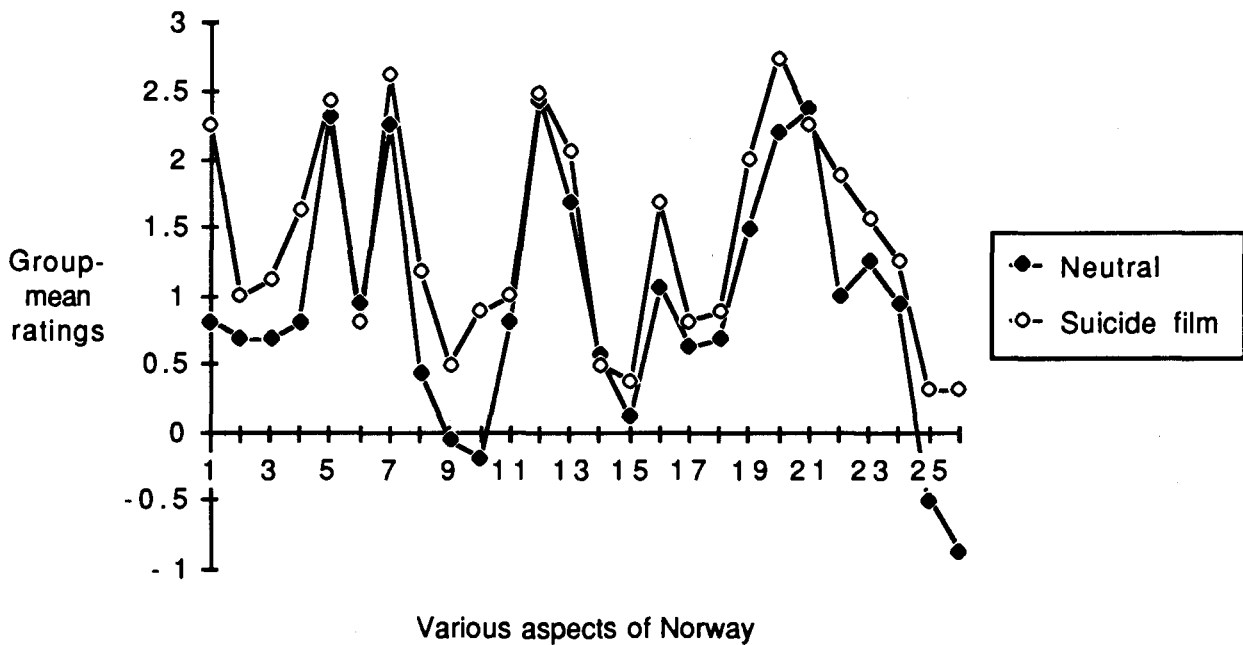
**Figure 7.6: A comparison of evaluations in the suicide-film group vs. the neutral mood control group**

It is evident that the evaluations are generally higher in the suicide-film group. Of the 26 evaluations, as much as 23 are higher for the suicide-film group. The two-tailed probability of this occuring at random is 0.0002. The grand mean for all evaluations show a significant difference between the two groups at $\alpha<0.01$ with the highest mean in the suicide-film group. For the different scales, a comparison between the two groups shows the following:

| Scale | Group means neutral | Group means suicide-film | Sign. Two sample T-test | Sign. Mann-Whitney test |
|---|---|---|---|---|
| Nature, peace and quiet | 9.06 | 12.06 | 0.009 | 0.010 |
| Vacation activities | 10.38 | 13.69 | 0.041 | 0.034 |
| General aspects | 2.38 | 3.81 | 0.210 | 0.115 |
| Overall evaluation | 0.81 | 3.44 | 0.056 | 0.030 |

**Table 7.7: Results from T-tests and Mann-Whitney tests of differences in scale-scores for the suicide-film group vs. the neutral control group**

All scales have higher scores in the suicide-film group. Note, however, that the difference for the General aspects-scale is not significant. For the Overall evaluation-scale, the non-parametric Mann-Whitney test shows a significant difference, while the parametric two sample T-test does not. Again it seems that when we break up the grand mean of all evaluations into different scales, the differences between the two groups become less clear, and even insignificant for some of the scales.

We can conclude that there seem to be mood-discongruent evaluation effects for the suicide group, and this has two implications. First, we now have two negative mood groups that both show discongruent evaluation effects. This makes it less likely that the asymmetric effects between positive and negative effects have occurred by chance only. The second implication is that we can now rule out the empathy-effect as a possible explanation for the discongruent mood effects in the "Night and fog" group.

Hypothesis 1.2. concerning the impact of knowledge about Norway, was also re-tested using subjects from all four groups. Because of the higher evaluations in the suicide-film group, between-groups differences were now found to be significant (F-value=3.0, significance of F=0.037). However, the knowledge score did not increase its explanatory power in the analysis of variance. Included as a covariate the knowledge score's regression coefficient was far from significant (Significance of T=0.703). Nor did the interaction between group and knowledge score explain any significant part of the variance (F-value=0.43, significance of F=0.735). In other words, including the fourth group did not change our conclusion. There is still no support for hypothesis 1.2.

In the survey methodology literature, it is often stated that the respondent's mood state may be a biasing factor and a source of response effects. The results from experiment 1 give, in our opinion, little support for such a notion. Although mood biases were detected, the overall response pattern was very similar in all groups. Below the group-mean ratings for all groups in experiment 1 are shown.

3
2.5
2
1.5
1
0.5
0
-0.5
-1

Group-
mean
ratings

1  3  5  7  9  11  13  15  17  19  21  23  25

-◆- Neutral
-○- Comedy
-■- Night and fog
-□- Suicide film

Various aspects of Norway
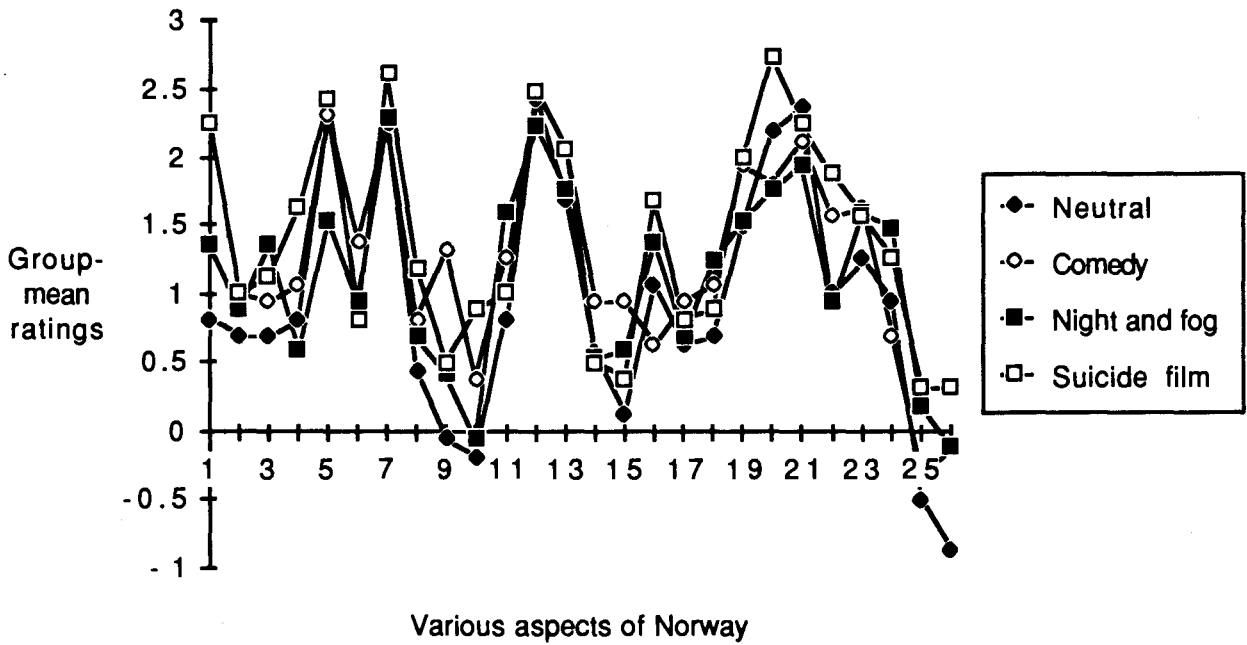
**Figure 7.7: The group-mean evaluations in all four groups shown together**

As one can see from the figure, all groups seem to follow the same pattern. We can also examine how the different group-means correlate. Below, the correlations between the group-mean evaluations in the different groups are presented.

**- - - - P E A R S O N   C O R R E L A T I O N   C O E F F I C I E N T S - - -**

|  | Neutral | Comedy | Night and fog | Suicide-film |
|---|---|---|---|---|
| Neutral | 1.0000<br>( 26)<br>P= . | | | |
| Comedy | .8638<br>( 26)<br>P= .000 | 1.0000<br>( 26)<br>P= . | | |
| Night and fog | .9065<br>( 26)<br>P= .000 | .7989<br>( 26)<br>P= .000 | 1.0000<br>( 26)<br>P= . | |
| Suicide-film | .8923<br>( 26)<br>P= .000 | .8223<br>( 26)<br>P= .000 | .8096<br>( 26)<br>P= .000 | 1.0000<br>( 26)<br>P= . |

**Table 7.8: Correlations between the group-mean evaluations in the different groups**

As we can see from the correlation matrix above, the means in the various groups are highly correlated. This confirms that the response pattern is generally the same in all groups. Alternatively we can treat each group as a case and each group-mean evaluation as an observation. If we now compute Kendall's coefficient of concordance, this coefficient will give us an estimate for how similar the ratings are between the four groups. The results from the computation are presented below.

| Cases | W | Chi-Square | D.F. | Significance |
|---|---|---|---|---|
| 4 | .8658 | 86.5828 | 25 | .0000 |

**Table 7.9: Kendall's coefficient of concordance for the group-mean evaluations in the different groups**

The coefficient of concordance, W ranges from 0 to 1, with 0 signifying no agreement and 1 signifying complete agreement. W can thus be interpreted as the average correlation coefficient between the groups. Here a concordance of roughly 87% is observed, which means that the groups are fairly similar in their ratings of the different aspects of Norway.

When we consider that the magnitude of the detected mood biases was rather small, and that the overall response pattern was very similar in all groups, our conclusion is that mood in the case of experiment 1, does not constitute a serious source of response effects.

By testing hypothesis 1.2. we found that the respondents' level of knowledge about Norway does not have a great impact for their sensitivity to mood effects. Our impression is that the subjects' knowledge about Norway was rather limited. The knowledge section of the questionnaire for the respondent with median knowledge-level is presented in appendix 3. As at least any Norwegian can see, this subject does not know a great deal about Norway. The population estimate is pretty good, but the subject does not get any cities in Norway correct, nor its neighboring countries. The capital of Norway is said to be Amsterdam, which is obviously wrong, and the only industry approximately correct is fishing. The subject has a good score on question 6, by stating correctly that both Thor Heyerdahl and Leif Ericson are/were Norwegians. It is evident from the subject's answers that he confuses Norway with the Netherlands, a mistake that was made by several other subjects.

If we consider the subjects' modest knowledge-level, it is tempting to classify "Norway as a travel destination" as a low-familiarity product. In this respect, it is very surprising that knowledge was not found to be an important determinant in how sensitive the subjects were to mood effects. It was also unexpected that the mood-biases that were detected in the evaluations were so small. As we remember, Srull (1984) has stated that mood effects will be greatest when subjects evaluate low-familiarity products.

There are however reasons to believe that we just cannot equate knowledge-level with familiarity. For example, looking at the evaluations in experiment 1, we find that aspects like weather and possibilities to have a reasonably priced vacation in Norway are rated extremely low, while possibilities for hiking and possibilities to experience clean and undisturbed nature are highly rated aspects. These ratings are very much in line with the general strengths and weaknesses of the Norwegian tourist product. This indicates that the subjects, even though they know little about Norway in general, are familiar with Norway as a travel destination.

As we have mentioned earlier, some of the aspects that were evaluated by the subjects were sampled from a survey that was conducted on actual tourists in Norway, in the summer of 1987. To investigate further how familiar the subjects in experiment 1 are with Norway, a comparison with the actual tourists' evaluations can be made.
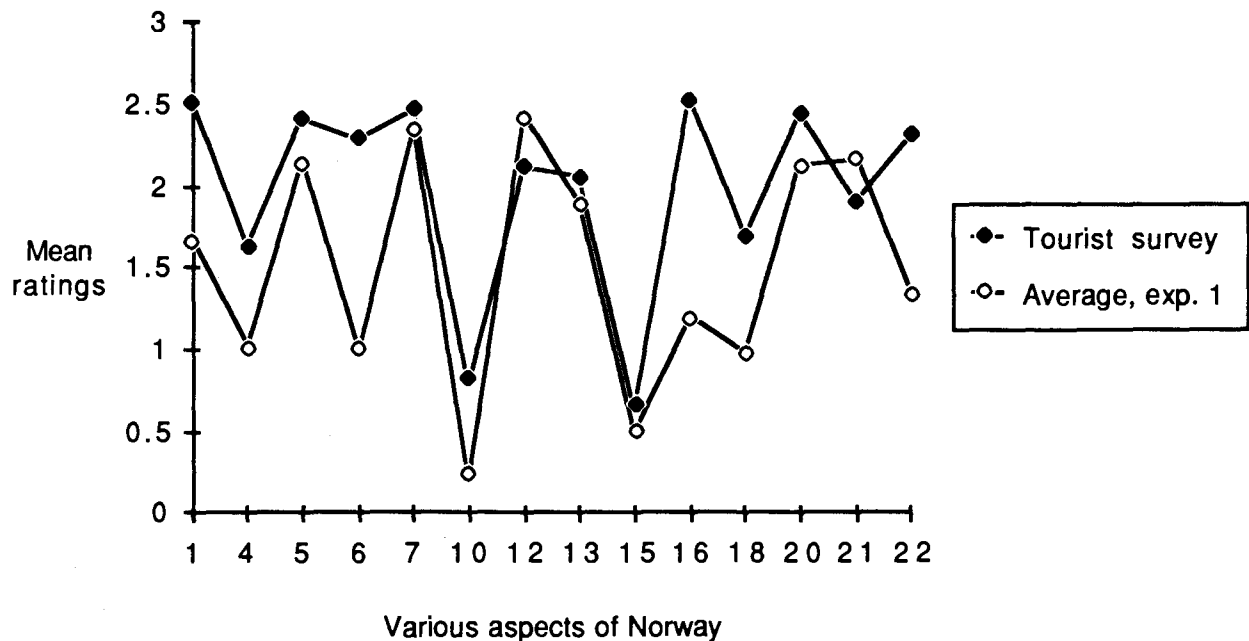
Figure 7.8: A comparison of the evaluations in experiment 1 and evaluations made by actual tourists

Aspects

1. The possibility to see and experience nature in Norway is.....

4. The swimming possibilities in Norway are.....

5. The possibilities for hiking in Norway are.....

6. The possibilities for nightlife and entertainment in Norway are.....

7. The possibilities for a calm and peaceful stay in Norway are.....

10. The weather in Norway is.....

12. The possibilities to experience something new during a vacation in Norway are.....

13. The possibilities to eat well during a vacation in Norway are..

15. The possibilities to have a reasonably priced vacation in Norway are.....

16. The possibilities to become physically fit during a vacation in Norway are.....

18. The shopping possibilities in Norway are.....

20. The possibility to experience clean and undisturbed nature in Norway is.....

21. The possibilities for cultural experiences during a vacation in Norway are.....

22. Service and helpfulness in Norway is.....

In the figure we have compared the mean scores of all subjects in experiment 1 with the mean scores of approximately 1800 foreign tourists visiting Norway. As we can see, the response patterns are pretty similar, with a correlation between the means in the two groups of more than 0.7. This is, in our opinion, an indication that the subjects in

experiment 1 have a strong stereotype about Norway as a travel destination, and that this stereotype is very much in line with the attitude of tourists that have actually visited Norway.

From the perspective of the clear stereotype about the Norwegian tourist product that seems to exist among the subjects, it is not surprising that the mood effects were found to be as modest as was the case in experiment 1. This is because the subjects could use the stereotype as a basis for their evaluations, and thus were less influenced by their temporary mood states.

## 7.5. Implications

In experiment 1, we have compared one positive mood group and two negative mood groups with a neutral control group to see how the subjects' evaluations were influenced by their mood states. We have detected subtle, but consistent mood biases for both positive and negative moods. In accordance with hypothesis 1.1. the biases were in a mood-congruent direction for the positive mood group. For negative mood, no direction was hypothesized, but the results indicated mood-discongruent mood effects for both negative mood groups. However, even though there were differences between the various groups, the overall response pattern seemed to be the same in all groups. Hypothesis 1.2. predicted that subjects who had a high level of knowledge about Norway would less likely be influenced by their current mood states in the evaluations they make about Norway. In experiment 1, we found no support for this hypothesis.

What then are the implications of the results? First, the discongruent effects in the two negative mood groups agree with the well-documented asymmetry between positive- and negative mood states. As discussed previously, there are reasons to believe that while a positive mood most often seems to bias evaluations in an upward direction, the opposite will not necessarily be true for negative moods. By including a second negative mood group, we were able to rule out the alternative "empathy" explanation, and reduce the probability that the discongruent results occurred by chance only. In other words, there seems to be solid evidence for asymmetric effects between positive and negative moods.

The second implication experiment 1 raises is the issue of familiarity. Through the knowledge questions it was established that the subjects' level of knowledge about Norway was rather low. Consequently, considerable mood effects were expected. The mood effects, however, turned out to be subtle, and more importantly, the overall response pattern seemed to be the same in all groups. Furthermore, contrary to the predictions of hypothesis 1.2, the knowledge score was not found to be of any importance with regard to mood effects. Does this mean then that familiarity has no significance? Not necessarily. As discussed previously, there are indications that we just cannot equate knowledge-level with familiarity. When we compared the evaluations made by the subjects in experiment 1 with evaluations made by actual tourists we found a striking similarity. This implies that even though the subjects have little factual knowledge about Norway, they seem to be familiar with Norway as a travel destination. In other words, the subjects most likely have a stereotypical impression of Norway, and it is plausible that this stereotype and not their mood states provided most of the basis for their evaluations.

The focus in experiment 1 was on how a pure mood induction procedure will influence the subjects' evaluations. In the next experiment we will examine the effects of a stimulus that combines mood induction with information about the target object.

# CHAPTER 8

# Experiment 2

In this experiment, the focus was on the film "Norway, Europe never looked so good". We were interested in determining what effects the film had on reported mood and also how the film would influence the subjects' evaluations through its information content and its anticipated mood inducing properties. Three groups were included in the experiment:

1. The first group (n=18) completed the Mood Adjective Check List as a pre-treatment measure. The following instructions were given:

   *"What I would like you to do first, is to complete this short questionnaire. When you are finished, please raise your hand so I can collect your questionnaire. I have written a number in the right corner of the questionnaire, please memorize this number and make sure that it corresponds with the number on the second questionnaire you will get later in this experiment."*

This procedure was used to ensure a match between the two questionnaires. After the pre-treatment measure, the following instructions were read:

   *"I will now show a film that is currently being used by the Norwegian Tourist Board. The film is intended to provide information to Americans about Norway as a travel destination. After you have seen the film, you will be asked to complete a second questionnaire, where most of the questions are about Norway as a travel destination."*

The subjects then watched the film "Norway, Europe never looked so good", and finally completed the same questionnaire as in experiment 1.

2. For the second group (n=15), only a post-treatment mood measure was taken. Otherwise, the procedure was the same as for the first group. A comparison of the post-treatment mood measure in group 2 with the pre-treatment measure in group 1 should give an unbiased estimate of the film's effect on mood.

3. In the third group (n=14), the procedure was equivalent to the one used in group 2. The subjects, however were not asked to evaluate the different aspects of Norway, but rather asked to rate how well different aspects of Norway were covered in the film. The part of the questionnaire used for this task is presented in appendix 2. Furthermore, the subjects in group 3 were not asked to evaluate any other travel destination. Isen et. al.'s (1987) manipulation check was included to measure the effect of the Norway-film. In all other respects, the questionnaire was the same as the one used for the groups 1 and 2.

## 8.1. Methodological issues

Before presenting the hypotheses there are two methodological issues that need to be elaborated on. The first issue concerns a main testing effect that occurred in the mood measures in group 1, while the second issue concerns a ceiling-effect problem that was encountered for some of the evaluations.

The design of experiment 2 with regard to mood-treatment and -measurement can be illustrated as follows:

| | Pre-treatment measure | Treatment | Post-treatment measure |
|---|---|---|---|
| Group 1: | $O_1$ | X | $O_2$ |
| Group 2: | | X | $O_3$ |
| Group 3: | | X | $O_4$ |

**Table 8.1: The design of experiment 2 with regard to mood-treatment and -measurement**

In the literature (see for example Kinnear and Taylor, 1987) it is well known that a comparison between $O_2$ and $O_1$ will not necessarily give an unbiased estimate of the treatment effect. This is because the pre-treatment measure $O_1$, may affect the post-treatment measure $O_2$, something usually referred to as a main testing effect. A comparison between $O_3$ and $O_1$, or $O_4$ and $O_1$ will be unbiased because no pre-treatment measure is taken in groups 2 and 3. The best measure however, will be to use the mean post-treatment for both groups 2 and 3 and subtract the mean score of $O_1$.

This measure is the best because no main testing effect is present, and because it utilizes the greatest number of observations. Below, the Norway-film's effects on the 35 mood adjectives are presented. The adjectives are ordered according to the magnitude of the effects.

| | $O_2$-$O_1$ | $O_3$-$O_1$ | $O_4$-$O_1$ | Best measure: ($O_3$ and $O_4$)-$O_1$ |
|---|---|---|---|---|
| Overjoyed | 0.055 | 0.644 | 0.658 | 0.651** |
| Playful | 0.056 | 0.622 | 0.603 | 0.613* |
| Carefree | 0.288 | 0.611 | 0.54 | 0.577** |
| Engaged in thought | 0.166 | 0.777 | 0.23 | 0.513 |
| Pleased | 0.5 | 0.666 | 0.19 | 0.436 |
| Leisurely | 0 | 0.389 | 0.413 | 0.401 |
| Energetic | 0 | 0.4 | 0.357 | 0.379 |
| Jittery | -0.029 | 0.404 | 0.328 | 0.368 |
| Boastful | -0.056 | 0.389 | 0.293 | 0.343 |
| Egoistic | 0 | 0.5 | 0.119 | 0.316* |
| Elated | 0 | 0.444 | 0.111 | 0.283 |
| Vigorous | -0.055 | 0.345 | 0.207 | 0.278 |
| Warm-hearted | 0.111 | 0.155 | 0.365 | 0.256 |
| Affectionate | -0.056 | -0.189 | 0.54 | 0.163 |
| Witty | -0.334 | 0.144 | -0.056 | 0.047 |
| Active | -0.222 | 0.122 | -0.064 | 0.032 |
| Suspicious | -0.167 | 0.189 | -0.135 | 0.032 |
| Sad | 0.166 | -0.145 | 0.151 | -0.002 |
| Defiant | 0.111 | 0.089 | -0.111 | -0.008 |
| Tired | 0.111 | 0.2 | -0.238 | -0.012 |
| Fearful | 0.111 | -0.111 | 0.032 | -0.042 |
| Intent | 0.111 | 0.011 | -0.103 | -0.044 |
| Angry | 0 | -0.056 | -0.056 | -0.056 |
| Rebellious | 0 | 0.033 | -0.214 | -0.086 |
| Self-centered | -0.167 | -0.033 | -0.143 | -0.086 |
| Regretful | -0.111 | 0.134 | -0.333 | -0.092 |
| Concentrating | -0.278 | -0.255 | 0.064 | -0.101 |
| Clutched up | -0.222 | -0.177 | -0.087 | -0.134 |
| Kindly | 0 | -0.133 | -0.143 | -0.138 |
| Sorry | -0.167 | -0.211 | -0.135 | -0.175 |
| Dubious | -0.389 | -0.067 | -0.381 | -0.219 |
| Sluggish | -0.277 | -0.4 | -0.19 | -0.299 |
| Drowsy | -0.111 | -0.2 | -0.453 | -0.322 |
| Nonchalant | -0.278 | -0.389 | -0.293 | -0.343 |
| Skeptical | -0.666 | -0.144 | -0.801 | -0.461* |
| Absolute sum differences | 5.371 | 9.778 | 9.137 | 8.308 |

* indicates that the difference is significant at $\alpha < 0.1$

** indicates that the difference is significant at $\alpha < 0.05$

**Table 8.2: Differences between the various measurements of the 35 mood adjectives**

In the table, absolute sum differences have been computed. This has been done by adding together the absolute value of the differences between pre- and post-treatment measures. Note that the absolute sum difference is much smaller for $O_2$-$O_1$ than for the other columns. This indicates that there is only a small difference between post- and pre-treatment measures in group 1. In other words there seems to be a main testing effect, and this effect occurs in the form of a <u>consistency bias</u>. The fact that the absolute sum difference is smallest in the $O_2$-$O_1$ comparison, suggests that the subjects may have tried to be consistent in their pre- and post-treatment responses. We can therefore conclude that $O_2$ seems to be a biased measure, and this measure will consequently not be used any further.

As we have already mentioned, a ceiling-effect problem was detected for some of the evaluations. The response-scale used for the evaluations ranges from -3 to +3. In the Norway-film groups, aspect #5, the possibilities for hiking in Norway, got a mean rating of 2.758 and this is pretty near the ceiling of the response-scale. An inspection of the mean score in the two groups revealed that the ceiling-effect problem was most apparent in group 2, with aspect #5 being the variable with the highest mean. The distribution for this variable is shown below:

ASPECT 5:   THE POSSIBILITIES FOR HIKING IN NORWAY

| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|---|---|---|---|---|---|
| | 2 | 1 | 6.7 | 6.7 | 6.7 |
| VERY GOOD | 3 | 14 | 93.3 | 93.3 | 100.0 |
| | Total | 15 | 100.0 | 100.0 | |

Kurtosis    15.000    Skewness    -3.873

Valid cases    15    Missing cases    0

**Table 8.3:   Frequency distribution of aspect #5 in group 2**

We notice that all subjects except one have given maximum score to this aspect. Kurtosis and skewness are measures that indicate if the responses correspond to the normal distribution. A distribution that is not symmetric, but has more cases, or more of a tail toward one end of the distribution is called skewed. If the tail is toward the right side of the distribution, the distribution is positively skewed. If the tail is toward the left, the distribution is negatively skewed. Another characteristic of the form of a distribution is called kurtosis, the extent to which, for a given standard deviation, observations cluster around a central point. Values for skewness and kurtosis are 0 if

the observed distribution is exactly normal. Positive values for skewness indicate a positive skew, while positive values for kurtosis indicate a distribution that is more peaked than normal. For samples from a normal distribution, measures of skewness and kurtosis will typically not be exactly zero, but will fluctuate around zero because of sampling variation. A value between -1 and +1 is usually considered acceptable for both skewness and kurtosis (Peterson and Sauber, 1983). As we can see both kurtosis and skewness fall way outside the acceptable range for the variable presented above.

In experiment 4, we will combine the Norway-film with the pure mood induction films from experiment 1. The ceiling-effect problem will however constitute a problem. Imagine that combining the Norway-film with Candid camera will increase the evaluations even higher, such an increase would probably not be detected. Because the ceiling is reached by the Norway-film alone, it will not be possible for the subjects to give a higher rating. The ceiling-effect problem can be overcome by changing the response-scales, and this will be the task in experiment 3. For now, we restrict ourselves to the conclusion that there seems to be ceiling-effects for several of the aspects evaluated by subjects in the Norway-film groups.

## 8.2. Hypotheses

A number of hypotheses were specified and tested in experiment 2:

> Hypothesis 2.1
> The film will have a positive impact on the subjects' reported mood.

The main basis for hypothesis 2.1 lies in the film's vividness and use of music. The purpose of the film is to make the viewer want to go to Norway, and the use of picture and sound is carefully designed to serve this purpose.

> Hypothesis 2.2
> The film "Norway, Europe never looked so good" will have greater effect on the evaluations, than would be the case for a pure mood induction procedure, where no information was presented.

The explanation for hypothesis 2.2. is based on the information content of the Norway-film. This film in addition to its favorable mood inducing properties, also gives specific information about Norway as a travel destination, and it is predicted that this

information content will lead to higher evaluations. As discussed under experiment 1, the subjects seemed to have a clear stereotype of what Norway can offer as a travel destination. It is however unlikely that this stereotype is so strong that the subjects' evaluations will remain the same after watching the Norway-film. The film presents a great deal of information about Norway, both in general and especially about factors that are important to potential tourists. Hypothesis 2.2 predicts that this information will influence the subjects' evaluations, not only because of the anticipated mood inducing form, but rather because the informational content is relevant for the evaluation task. In this respect, the Norway-film is expected to have a greater effect on evaluations than mood manipulations where no information about Norway is given.

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Hypothesis 2.3

The film will not have equal impact on all evaluations. By dividing the various aspects along two dimensions, high/low score in experiment 1 and poorly/fully covered in film, it is hypothesized that the film will have the following impact on evaluations:

## Evaluation in experiment 1

| Aspect covered in film | | Low | High |
|---|---|---|---|
| | Poorly covered | Medium changes | Small changes |
| | Fully covered | Large changes | Medium changes |

---

It is hypothesized that the evaluations will change the most for aspects that are fully covered in the film and that had low evaluations in experiment 1. For aspects that are fully covered, but had high evaluations in experiment 1, there is not the same room for improvement, and only medium changes are expected. For aspects that are poorly covered in the film, and scored low in experiment 1 a medium positive change is

expected. There is room for improvement for these aspects, but because of the poor coverage only a medium change is anticipated. The smallest changes are expected for aspects with poor coverage and high initial ratings. For these aspects there is little room for higher scores, and the film presents little that will improve the evaluations.

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Hypothesis 2.4

Mood will explain more of the variance in the overall evaluation of Norway as a travel destination for the Norway-film group, than will be the case for a group where a pure mood induction procedure has been employed.

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The theoretical explanation for hypothesis 2.4 is that of the informative function of mood states. The informative function implies, as discussed in chapter 3, that individuals simplify the judgement task by using their perceived affective reactions as relevant information. In the case of the pure mood induction procedure no information relevant to the evaluation task is presented, and the subjects' mood will therefore not be attributed to the product that is being evaluated. With the Norway film, on the other hand, an attribution-link will probably be formed between Norway as a travel destination and mood state. This attribution-link will, in our opinion, make mood a salient variable when the subject is asked to give his/her overall evaluation. Mood state will in other words have an informative function, and according to hypothesis 2.3 this function will make mood explain more of the variance in the overall evaluation, than would be the case for a pure mood induction procedure.

## 8.3. Hypotheses testing

In hypothesis 2.1 it was predicted that the Norway-film would have a positive impact on the subjects' reported mood. Below, the mean post-treatment mood score for groups 2 and 3 is shown together with pre-treatment mood score in group 1 and the mood scores from experiment 1.
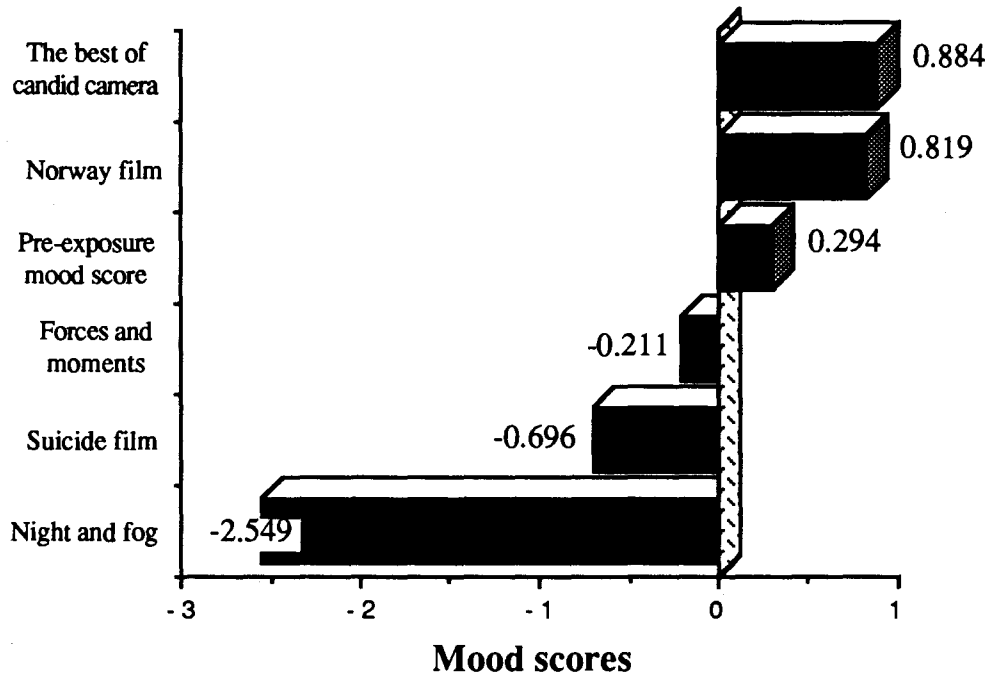


**Figure 8.1: Group-mean mood scores for the different film groups**

It can be seen that the post-treatment score is higher than the pre-treatment score (difference significant at $\alpha<0.05$ ). The mood inducing effect of the Norway-film seems to be somewhat less than that of "The best of candid camera". This difference is however not significant. The effect on the eight mood factors is shown below.
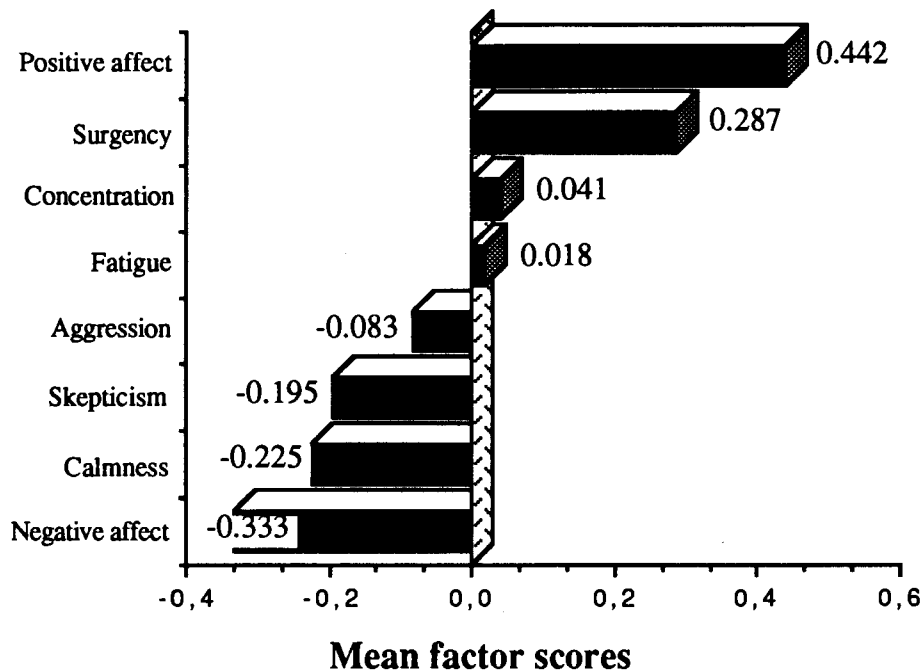
**Figure 8.2: The effect of the Norway-film on the eight mood factors**

The Norway-film apparently causes high loadings on Positive affect and Surgency, marginal loadings on Concentration and Fatigue, and negative loadings on Calmness and Negative affect. This indicates that the film has a positive and refreshing effect on its viewers.

To wind up this discussion, there seems to be support for hypothesis 2.1. In other words the film "Norway, Europe never looked so good" has been found to have mood inducing properties.

In hypothesis 2.2, it was predicted that the Norway-film would influence the evaluations of Norway in a positive way, and that the effect would be greater than if a pure mood induction procedure was employed. To test this hypothesis a comparison was made between the evaluations in groups 1 and 2 versus the evaluations made by the Candid camera group in experiment 1.
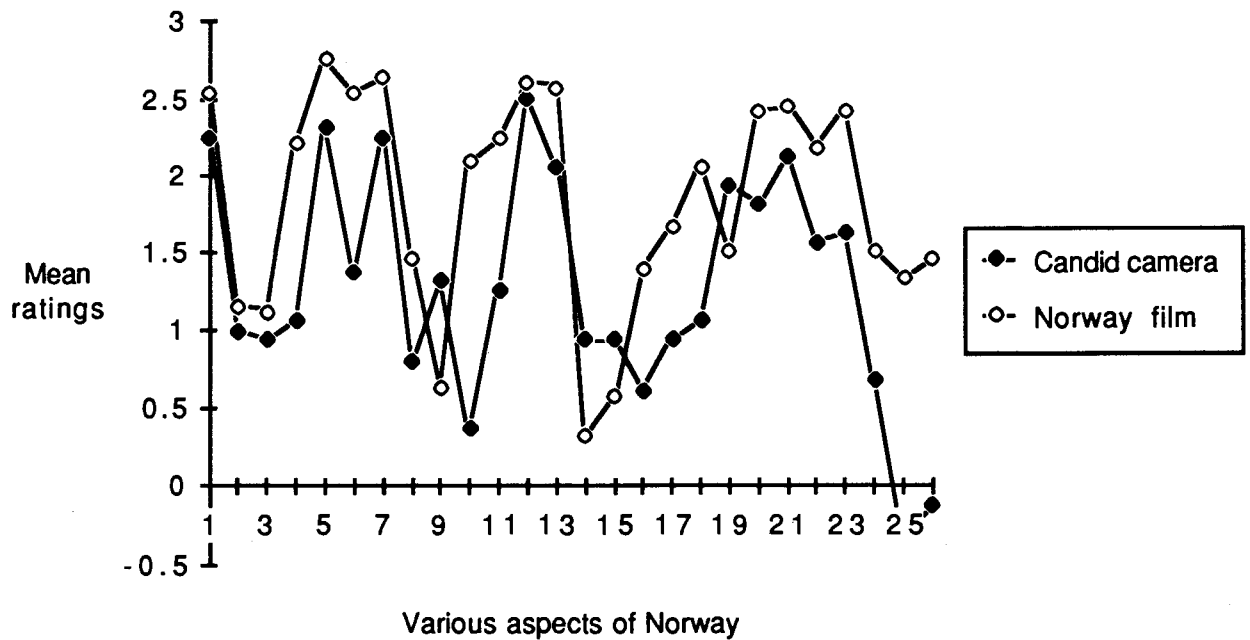
Figure 8.3: A comparison of evaluations in the Norway-film groups vs. the Candid camera group

As earlier, the various aspects of Norway are:

1. The possibility to see and experience nature in Norway is.....

2. The health-care system in Norway is.....

3. The educational system in Norway is.....

4. The swimming possibilities in Norway are..... **

5. The possibilities for hiking in Norway are..... *

6. The possibilities for nightlife and entertainment in Norway are..... ***

7. The possibilities for a calm and peaceful stay in Norway are.....

8. Democracy and civil-rights in Norway are..... **

9. The suicide-rate in Norway is.....

10. The weather in Norway is..... ***

11. The standard of living in Norway is..... ***

12. The possibilities to experience something new during a vacation in Norway are.....

13. The possibilities to eat well during a vacation in Norway are.. *

14. The unemployment-rate in Norway is..... *

15. The possibilities to have a reasonably priced vacation in Norway are.....

16. The possibilities to become physically fit during a vacation in Norway are.....

17. Communications and transportations in Norway are..... **

18. The shopping possibilities in Norway are..... ***

19. The safety as a tourist in Norway is.....

20. The possibility to experience clean and undisturbed nature in Norway is.....

21. The possibilities for cultural experiences during a vacation in Norway are.....

22. Service and helpfulness in Norway is..... **

23. Overall, I would rate Norway as a travel destination as..... ***

24. In comparison with other Scandinavian countries, Norway as a travel destination is..... **

25. In comparison with other European countries, Norway as a travel destination is..... ***

26. In comparison with travel-destinations in general, Norway as a travel destination is..... ***

* indicates that the difference is significant at α< 0.1

** indicates that the difference is significant at α< 0.05

*** indicates that the difference is significant at α< 0.01

Figure 8.3. shows that the Norway-film groups rank as many as 22 of the 26 aspects higher than the subjects in the Candid camera group did. Several of the differences for the 22 variables are highly significant, while none of the 4 aspects where the Candid camera group has the highest mean score are significant at the α<0.05 level. The grand mean of all evaluations was also computed. In the Candid camera group the grand mean was 1.28 while in the Norway-film groups it had jumped to 1.84. The difference between the two grand means is significant at the α<0.001 level.

As previously, the evaluations were assembled together in scales, and a comparison between the Norway-film groups versus the Candid camera group shows the following:

| Scale | Mean score Candid camera | Mean score Norway-film | Sign. Two-sample T-test | Sign. Mann-Whitney test |
|---|---|---|---|---|
| Nature, peace and quiet | 10.56 | 11.88 | 0.269 | 0.317 |
| Vacation activities | 13.06 | 20.39 | 0.000 | 0.000 |
| General aspects | 3.69 | 4.06 | 0.705 | 0.813 |
| Overall evaluation | 1.88 | 6.73 | 0.000 | 0.000 |

Table 8.4: Results from T-tests and Mann-Whitney tests of differences in scale-scores for the Candid camera group vs. the Norway-film groups

Note that significant changes were found for only two of the four scales. This may indicate that the Norway-film did not bring any new or persuasive information to its viewers about the nature, peace and quiet-aspects of Norway, nor did it do anything to change their impression of the general aspects. It is however worth noticing that the Norway-film, with its heavy emphasis on all the things tourists can do during a vacation in Norway, managed to increase the mean score on the Vacation activities-scale significantly. The most significant change however, occurred on the Overall evaluation-scale, with a significant difference between the two groups at the $\alpha < 0.001$ level.

We can conclude that there seems to be strong support for hypothesis 2.2. The evaluations are significantly higher in the Norway-film groups than in the Candid camera group. In other words, the informational content of the Norway-film is an important factor in increasing the subjects' evaluations of various aspects of Norway. It is however worth noticing that the Norway-film did not have the same effect for all types of evaluations. For the Nature, peace and quiet-scale and the General aspects-scale, only insignificant differences were recorded. What aspects are affected the most and the least is a question that will be elaborated on in the testing of hypothesis 2.3.

In hypothesis 2.3 it was predicted that the effect of the film would be greatest for those aspects that were fully covered in the film and that had low evaluations in experiment 1. For evaluations with high evaluations in experiment 1 and good coverage in the Norway-film only medium effects were anticipated. The same was predicted for aspects with a low score in experiment 1 and poor coverage in the Norway-film. The smallest change was predicted for evaluations that received high ratings in experiment 1 and poor coverage in the Norway-film.

To divide the aspects along the two dimensions, two median splits were performed. First the aspects were split according to the mean score in experiment 1, and thereafter along the poor/good coverage dimension from group 3. As explained earlier the subjects in group 3 were asked to rate how well different aspects of Norway were covered in the film. No ratings were performed for aspect 23, overall evaluation of Norway as a travel destination. This variable was therefore excluded. Aspect 3, the health-care system in Norway, was found to be the median variable in experiment 1, while aspect 10, the weather in Norway constituted the median in the coverage dimension. The median variables were excluded. The remaining variables were divided into four groups as follows:

## 1. Low ratings in experiment 1, good coverage in Norway-film

Expected differences: LARGE

| Aspects | Mean score experiment 1 | Mean score Norway-film | Difference | Sign. diff. |
|---|---|---|---|---|
| 6. Nightlife and entertainment | 1.015 | 2.545 | 1.530 | 0.000 |
| 17. Communications and transportations | 0.766 | 1.667 | 0.901 | 0.000 |
| 18. Shopping possibilities | 0.969 | 2.061 | 1.092 | 0.000 |
| Mean for the group of aspects | 0.917 | 2.091 | 1.174 | 0.000 |

Mean coverage rating: 4.357

**Table 8.5: Differences in evaluations between the groups in experiment 1 and the Norway-film groups for the first set of variables**

All the variables show significant differences at the $\alpha<0.001$ level. In other words, the mean for the three aspects is significantly different between the groups in experiment 1 and the Norway-film groups. This is in accordance with the large differences we expected.

## 2. Low ratings in experiment 1, poor coverage in Norway-film

Expected differences: MEDIUM

| Aspects | Mean score experiment 1 | Mean score Norway-film | Difference | Sign. diff. |
|---|---|---|---|---|
| 2. Health-care system | 0.892 | 1.152 | 0.260 | 0.309 |
| 4. Swimming possibilities | 1.015 | 2.212 | 1.197 | 0.000 |
| 8. Democracy and civil-rights | 0.781 | 1.455 | 0.674 | 0.007 |
| 9. Suicide-rate | 0.538 | 0.636 | 0.098 | 0.749 |
| 14. Unemployment-rate | 0.631 | 0.333 | -0.298 | 0.231 |
| 15. Possibilities to have a reasonably priced vacation | 0.508 | 0.576 | 0.068 | 0.819 |
| 25. Norway compared to other European countries | -0.077 | 1.333 | 1.410 | 0.000 |
| 26. Norway compared to travel destinations in general | -0.200 | 1.455 | 1.655 | 0.000 |
| Mean for the group of aspects | 0.511 | 1.144 | 0.633 | 0.000 |

Mean coverage rating: 2.071

**Table 8.6: Differences in evaluations between the groups in experiment 1 and the Norway-film groups for the second set of variables**

The mean for all variables in the set differs at the $\alpha < 0.001$ level. However there are insignificant differences for several of the variables. This indicates that the difference between the groups in experiment 1 and the Norway-film groups are less for these variables than was the case for the first set of variables. The observations are in accordance with our expectations.

## 3. High ratings in experiment 1, good coverage in Norway-film

Expected differences: MEDIUM

| Aspects | Mean score experiment 1 | Mean score Norway-film | Difference | Sign. diff. |
|---|---|---|---|---|
| 1. See and experience nature | 1.662 | 2.545 | 0.883 | 0.000 |
| 5. Possibilities for hiking | 2.138 | 2.758 | 0.620 | 0.000 |
| 7. Possibilities for a calm and peaceful stay | 2.354 | 2.636 | 0.282 | 0.137 |
| 11. Standard of living | 1.169 | 2.242 | 1.073 | 0.000 |
| 12. Possibilities to experience something new | 2.415 | 2.606 | 0.191 | 0.281 |
| 13. Possibilities to eat well | 1.892 | 2.576 | 0.684 | 0.000 |
| 20. Possibility to experience clean and undisturbed nature | 2.123 | 2.424 | 0.301 | 0.198 |
| 21. Possibility for cultural experiences | 2.169 | 2.455 | 0.286 | 0.160 |
| 22. Service and helpfulness | 1.338 | 2.182 | 0.844 | 0.000 |
| Mean for the group of aspects | 1.918 | 2.492 | 0.574 | 0.000 |

Mean coverage rating: 4.460

Table 8.7: Differences in evaluations between the groups in experiment 1 and the Norway-film groups for the third set of variables

For this set too, there are several variables that only show insignificant differences. Our expectations about medium sized differences thus seem to be fulfilled.

## 4. High ratings in experiment 1, poor coverage in Norway-film

Expected differences: SMALL

| Aspects | Mean score experiment 1 | Mean score Norway-film | Difference | Sign. diff. |
|---|---|---|---|---|
| 16. Possibilities to become physically fit | 1.188 | 1.394 | 0.206 | 0.443 |
| 19. The safety as a tourist | 1.738 | 1.515 | -0.223 | 0.347 |
| 24. Norway compared to other Scandinavian countries | 1.092 | 1.515 | 0.423 | 0.063 |
| Mean for the group of aspects | 1.339 | 1.475 | 0.136 | 0.418 |

Mean coverage rating: 2.476

Table 8.8: Differences in evaluations between the groups in experiment 1 and the Norway-film groups for the fourth set of variables

Just as we anticipated, the differences appear to be insignificant for this set of variables. Neither the variables individually nor combined, show any significant differences between the groups in experiment 1 and the Norway-film groups.

We can conclude that hypothesis 2.3 seems to be supported. The Norway-film does not have equal impact on the evaluations of all aspects, and the differences are in accordance with the pattern suggested by the hypothesis.

In hypothesis 2.4 it was suggested that mood would explain more of the variance in the overall evaluation of Norway as a travel destination for the Norway-film group, than would be the case for a pure mood induction procedure. The reason being that the Norway-film links informational content with mood induction. To test the hypothesis separate regression analyses for group 2 and the Candid camera group were performed. As we discussed earlier the post-treatment mood measure in group 1 seems to be influenced by a main testing effect, and the subjects in this group were consequently not included in the regression analysis.

In the analyses, the Overall evaluation-scale was used as a dependent variable, while the other scales plus the mood score were used as independent variables. The are two reasons why the scales were used as independent variables instead of the individual aspects variables. First, apart from the last four evaluations that make up the Overall evaluation-scale there are 22 variables. This number exceeds the number of subjects in the individual groups, and this implies that the degrees of freedom in the analysis will be negative. The second problem arises from the ceiling-effects that were found for some of the variables in the Norway-film groups. It can be argued that these effects violates the underlying assumptions for use of regression analysis.

To see if the ceiling-effect problem was still present when the individual variables were grouped together in scales, kurtosis and skewness were computed for the variables to be used in the regression analyses.

| Variable | Candid camera group | | Norway-film group | |
|---|---|---|---|---|
| | Kurtosis | Skewness | Kurtosis | Skewness |
| Nature, peace and quiet-scale | -0.075 | -0.810 | 4.180 | -1.779 |
| Vacation activities-scale | -0.680 | 0.520 | -0.246 | -0.611 |
| General aspects-scale | -0.694 | -0.343 | 0.115 | 0.730 |
| Overall evaluation-scale | 2.306 | 1.368 | -0.506 | -0.778 |
| Mood score | -0.832 | -0.020 | -0.301 | -0.262 |

**Table 8.9: Kurtosis and skewness for the four scales in the Candid camera group and the Norway-film group**

As discussed before, values between -1 and +1 for kurtosis and skewness indicate that the distribution is fairly normal. In the Norway-film group, the Nature, peace and quiet-scale shows unacceptable figures. This is not surprising considering that this scale consists primarily of the variables where serious ceiling-effects occurred. The high values for kurtosis and skewness are indications that a ceiling-effect is present, and the Nature, peace and quiet-scale is consequently excluded from the regression analyses. As for the Overall evaluation-scale, this variable has too high values for both kurtosis and skewness in the Candid camera group. We shall soon see how this problem can be eliminated. But for now we will present the results from the regression analyses.

## Regression analysis in the Norway-film group

Dependent variable
Overall evaluation-scale

| Independent variables | B | SE B | Beta | T | Sig. T |
|---|---|---|---|---|---|
| Vacation activities-scale | 0.0824 | 0.2046 | 0.1036 | 0.403 | 0.6948 |
| General aspects-scale | 0.2490 | 0.2319 | 0.2825 | 1.073 | 0.3061 |
| Mood score | 1.5153 | 0.7879 | 0.5037 | 1.923 | 0.0807 |
| (Constant) | 2.1936 | 4.4993 | | 0.488 | 0.6354 |

$R^2$ without mood score as independent variable: 0.04126
$R^2$ with mood score as independent variable:     0.28253

**Table 8.10: Results from the regression analysis in the Norway-film group**

Observe that mood score is the only significant (at $\alpha < 0.1$) explanatory variable in the regression-equation. What is even more interesting is that the explanatory power increases from about 4% of the total variance, to a respectable 28% when mood score is included. This indicates that mood is able to explain a great deal of the variance in overall evaluation in the Norway-film group.

## Regression analysis in the Candid camera group

Dependent variable
Overall evaluation-scale

| Independent variables | B | SE B | Beta | T | Sig. T |
|---|---|---|---|---|---|
| Vacation activities-scale | 0.2083 | 0.1672 | 0.3455 | 1.246 | 0.2366 |
| General aspects-scale | 0.2213 | 0.2232 | 0.2396 | 0.991 | 0.3411 |
| Mood score | 1.2797 | 1.0946 | 0.3368 | 1.169 | 0.2651 |
| (Constant) | -2.7930 | 2.0676 | | -1.351 | 0.2017 |

$R^2$ without mood score as independent variable: 0.30274
$R^2$ with mood score as independent variable:     0.37404

**Table 8.11: Results from the regression analysis in the Candid camera group**

For the Candid camera group, mood score was not found to be a significant explanatory variable. Notice, that $R^2$ without mood score as an independent variable is much higher in the Candid camera group than is the case for the Norway-film group. In addition, the increase in explained variance obtained by including mood score is not as high in the Candid camera, as it was in the Norway-film. The results support hypothesis 2.4. Mood state really does seem to have greater explanatory power in the Norway-film group, than in the Candid camera group.

We established above that the kurtosis and skewness values were somewhat high for the Overall evaluation-scale in the Candid camera group. This problem can be overcome by a modification of the scale. It was found that if evaluation 25, Norway compared to other European countries, was excluded from the Overall evaluation-scale, the following values for kurtosis and skewness were observed:

| Variable | Candid camera group | | Norway-film group | |
|---|---|---|---|---|
| | Kurtosis | Skewness | Kurtosis | Skewness |
| Modified Overall evaluation-scale | 0.685 | 0.921 | 0.810 | -1.009 |

Table 8.12: Kurtosis and skewness for the Modified Overall evaluation-scale in the Candid camera group and the Norway-film group

Additional regression analyses with this Modified overall evaluation-scale as a dependent variable, were run. In the Norway-film group mood lost some of its explanatory power, with a reduction in the significance of T from 0.0807 to 0.1428, and a reduction in $R^2$ from 0.28253 to 0.20225. For the Candid camera group the significance of T for mood score was reduced from 0.2651 to 0.3710, while $R^2$ increased from 0.37404 to 0.40283.

If we compare the correlations between mood score and the evaluations in the two groups, we observe the following pattern.
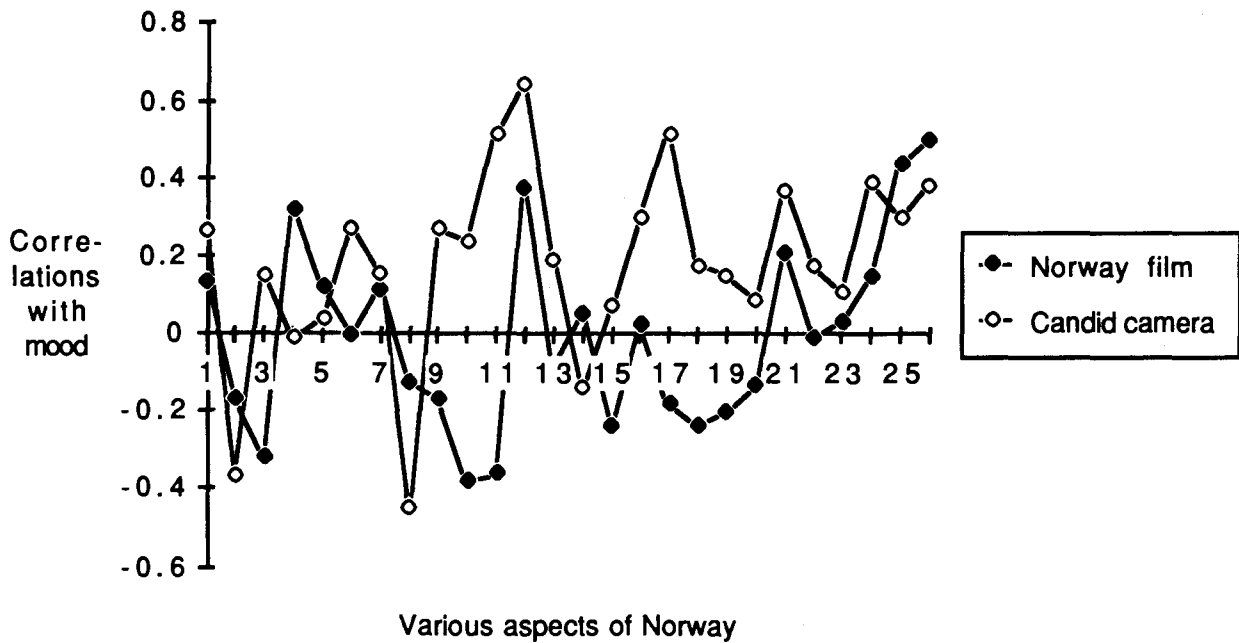
**Figure 8.4: Correlations between mood score and evaluations in the Norway-film group and the Candid camera group**

Most of the correlations between mood score and evaluations are insignificant, because of the small number of subjects in each group. We can still notice that the majority of evaluations show higher correlations with mood in the Candid camera group than in the Norway-film group. For the last couple of evaluations however, the correlations are higher in the Norway-film group. The differences between the groups become clearer if we compute the sum of all the individual aspects, i.e. the aspects that are not included in the overall scale.
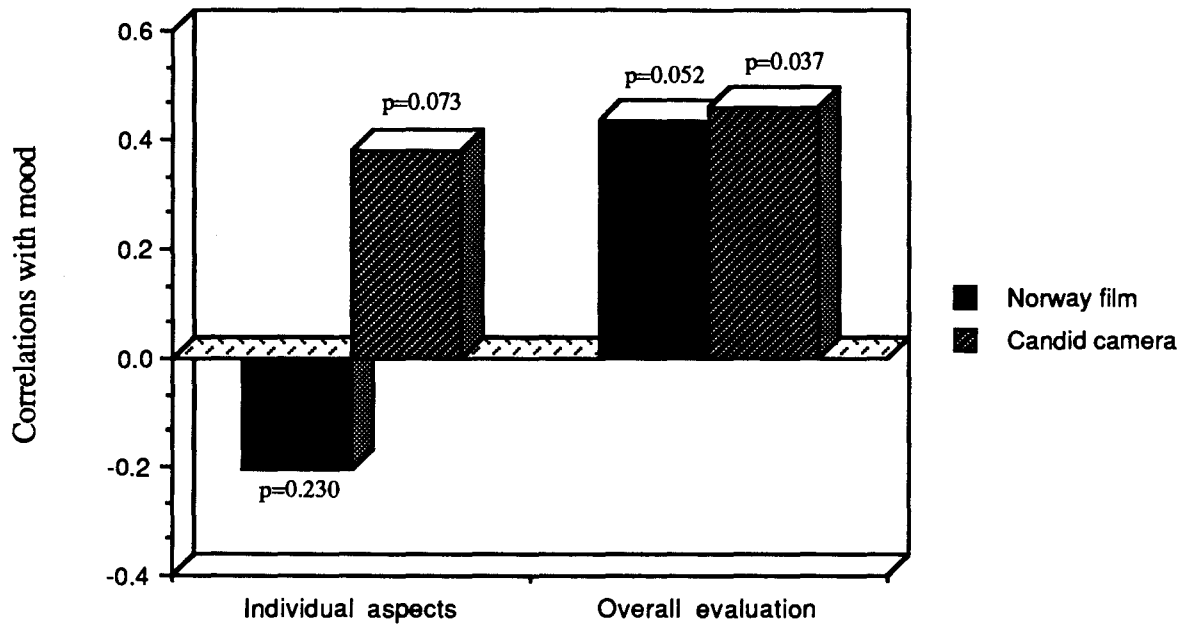
**Figure 8.5: Correlations between mood score and the evaluations grouped together**

As we can see from the figure, the Candid camera group have fairly significant positive correlations between mood and both types of evaluations, that is both individual aspects and overall evaluation. For the Norway-film group, it is different. Here, mood only correlates significantly with the overall aspects of Norway. For the individual aspects there is even a negative correlation, but this correlation is not significant.

What this boils down to is that mood seems to have a different effect on the two groups. While a good mood seems to bias all aspects upwards in the Candid camera group, mood seems to be a component of its own right in the Norway-film group. In terms of multi-attribute models this can expressed as follows:

## Norway-film group

$$A_o = \sum_{i=1}^{n} w_i * X_i + w_m * M$$

where

$A_o$ = Observed attitude (overall evaluation)
$w_i$ = The importance of attribute i
$X_i$ = Attribute i

$w_m$= The importance of mood

M = Mood score

In the model the observed overall evaluation is a weighted average between the various aspects of Norway and mood. Notice that mood does not bias the individual aspects, but is included in the computation as an element in its own right. In the Candid camera group the observations seem to be more in line with the following model.

## Candid camera group

$$A_o= m * (A_T)= m * (\sum_{i=1}^{n} w_i * X_i )$$

where

$A_T$ = True overall evaluation, i.e. not biased by mood

m  = Mood bias, m > 1 for positive moods

In this model, mood is a biasing factor to whatever is evaluated. This is because mood was found to correlate positively at a significant level with both the individual aspects as well as the overall evaluation of Norway as a travel destination. Mood will, in other words, have no main effect on the overall evaluation, its impact will be limited to interaction effects with the individual aspects.

## 8.4. Implications

In experiment 2 we found that the film "Norway, Europe never looked so good" had positive mood inducing properties, as predicted by hypothesis 2.1. On the reported post-treatment mood measure in group 1, we detected traces of a main testing effect in the form of a consistency bias, caused by the pre-treatment mood measure. This bias was by no means unexpected, and it meant that only the mood scores in groups 2 and 3 could be used as unbiased post-treatment mood measures.

Hypothesis 2.2 predicted that the Norway-film would make the subjects' evaluations about Norway more favorable and this hypothesis was supported. It was evident that the Norway-film subjects evaluated most aspects higher than the subjects in the Candid camera group did. But, the Norway-film did not have equal effect on the evaluations of

all aspects. In accordance with hypothesis 2.3. it was evident that the greatest changes occurred for those aspects that had a low score in experiment 1 and were fully covered in the film. As expected, the aspects with initial high ratings and poor coverage in the Norway-film, were those variables that showed the least changes.

In hypothesis 2.4 it was predicted that mood would explain more of the variance in the overall evaluation of Norway as a travel destination for the Norway-film group, than would be the case for a pure mood induction procedure. This is because of the informative function of mood states. The hypothesis was supported, but what is perhaps even more important is the fact that a mood induction procedure containing relevant information seems to work in an entirely different way compared to a pure mood induction procedure.

In the Norway-film group, it appears that mood acted as a component in its own right. The subjects mood states did not seem to bias the individual aspects of Norway, but nevertheless had an important effect on the overall evaluation of Norway as a travel destination. For the pure mood induction procedure, i.e. the Candid camera film, it was different. For this group, mood appeared to constitute a general bias on all evaluations, both individual and overall. It seems that the effect of the Candid camera film is that of "looking at one's world through rose-colored glasses." In other words, the positive shift in evaluations has nothing to do with Norway, it would most likely occur for whatever entity the subjects were asked to evaluate. It is our guess that in the Candid camera group no permanent association was formed in the subjects' minds between the favorable mood state and Norway as a travel destination. For the Norway-film group on the other hand, such a permanent association was probably formed, because the mood induction in this case was linked with salient information. Should we therefore have decided to measure the subjects' evaluations about Norway again, say for instance one week after the experiment, we would not anticipate the Candid camera group to differ from the neutral control group. This is because no permanent association between mood state and Norway as a travel destination had been formed. For the Norway-film group, a more permanent shift in evaluations would probably have occurred, and we would thus anticipate that the subjects in this group would still retain some of their favorable opinion about Norway as a travel destination.

# CHAPTER 9

# Experiment 3

As we discussed under experiment 2, there were indications of serious ceiling-effects for some of the variables in the Norway-film groups. The problem of ceiling-effects was most apparent in group 2. Below, the variables that received the highest group-mean ratings in this group are presented.
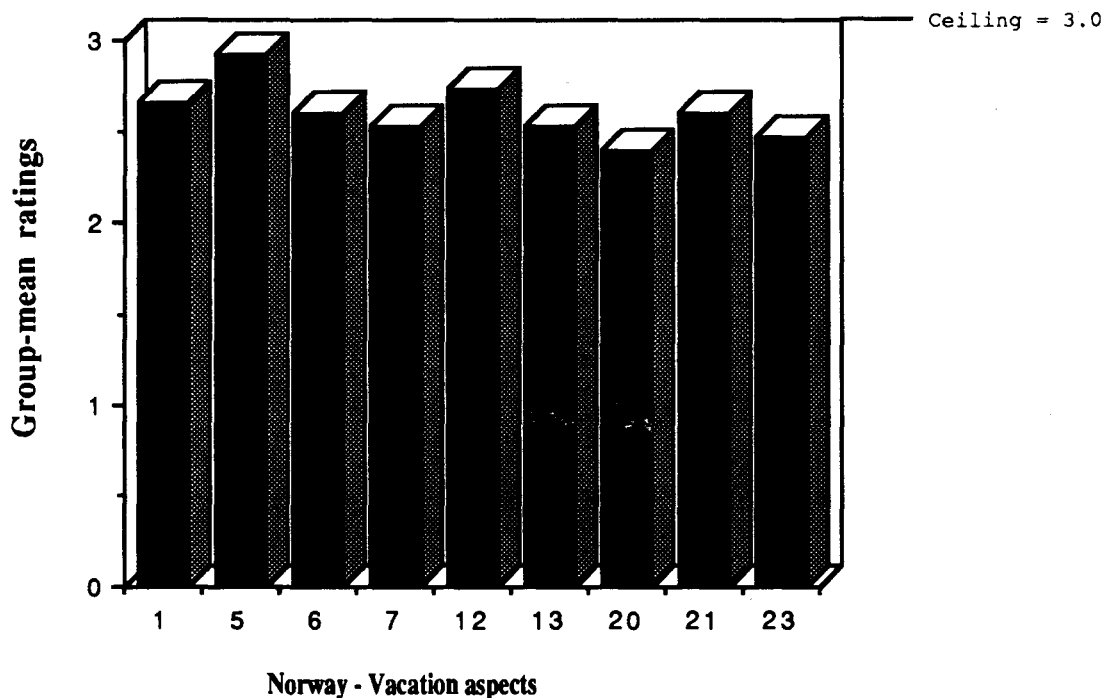


Figure 9.1: Group-mean ratings for some of the variables in group 2

Aspects

1. The possibility to see and experience nature in Norway is.....

5. The possibilities for hiking in Norway are.....

6. The possibilities for nightlife and entertainment in Norway are.....

7. The possibilities for a calm and peaceful stay in Norway are.....

12. The possibilities to experience something new during a vacation in Norway are.....

13. The possibilities to eat well during a vacation in Norway are..

20. The possibility to experience clean and undisturbed nature in Norway is.....

21. The possibilities for cultural experiences during a vacation in Norway are.....

23. Overall, I would rate Norway as a travel destination as.....

As we can see from figure 3.1. the ceiling-effect seems to be most serious for aspect 5, the possibilities for hiking in Norway. But, also a number of other variables have group-mean ratings close to the ceiling of the response-scale. To see if the distributions of the variables correspond with the normal distribution, kurtosis and skewness were computed.



Norway - Vacation aspects
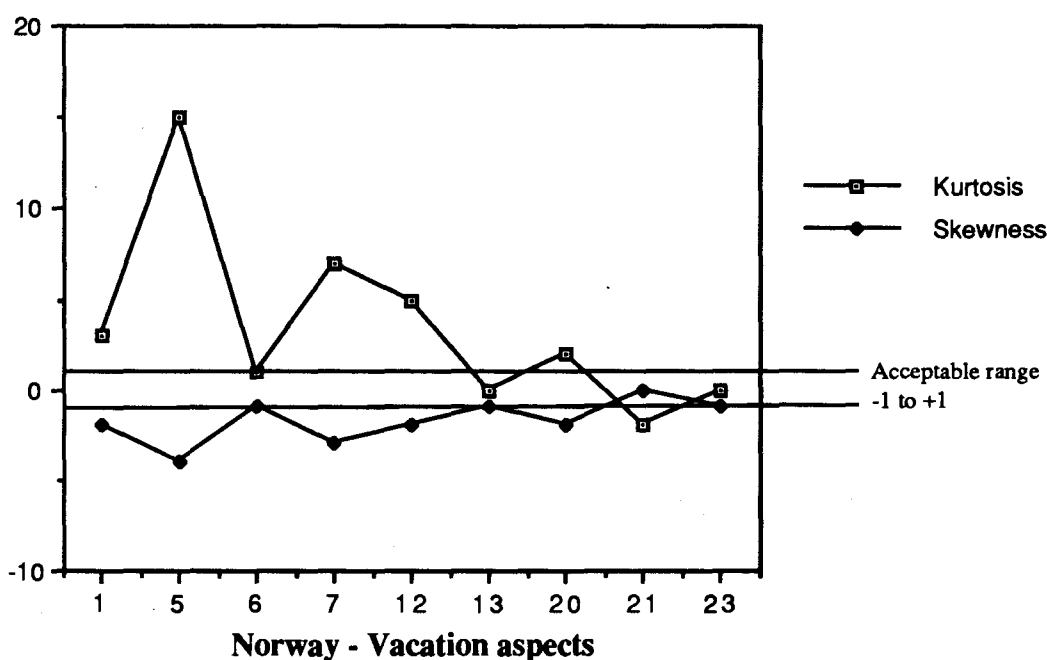
**Figure 9.2: Kurtosis and skewness for some of the variables in group 2**

It is obvious that neither kurtosis nor skewness are within the acceptable range for the majority of these variables. This means that their distributions do not correspond with the normal distribution, and this is another indication that there are serious ceiling-effects present.

We recall that the following response-scale was used for the evaluations in experiment 1 and 2:

| very<br>poor | | | | | | very<br>good |
|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 |

Can it be that the ceiling-effect problem can be eliminated by using another type of response-scale? To answer this question three different types of response-scales were designed and tested in experiment 3. The procedure was the same as earlier. The subjects first watched the Norway-film and then completed the questionnaire. Except for different response-scales, the questionnaire was identical to the one used in experiments 1 and 2.

## 9.1. Response-scale; 1 to 7

A total of 11 subjects were participants in this group. In the questionnaire, the subjects were asked to give each of the aspects a score between 1 and 7, where 7 was the best 'score possible and 1 the poorest. The group-mean ratings for the critical variables are presented below.
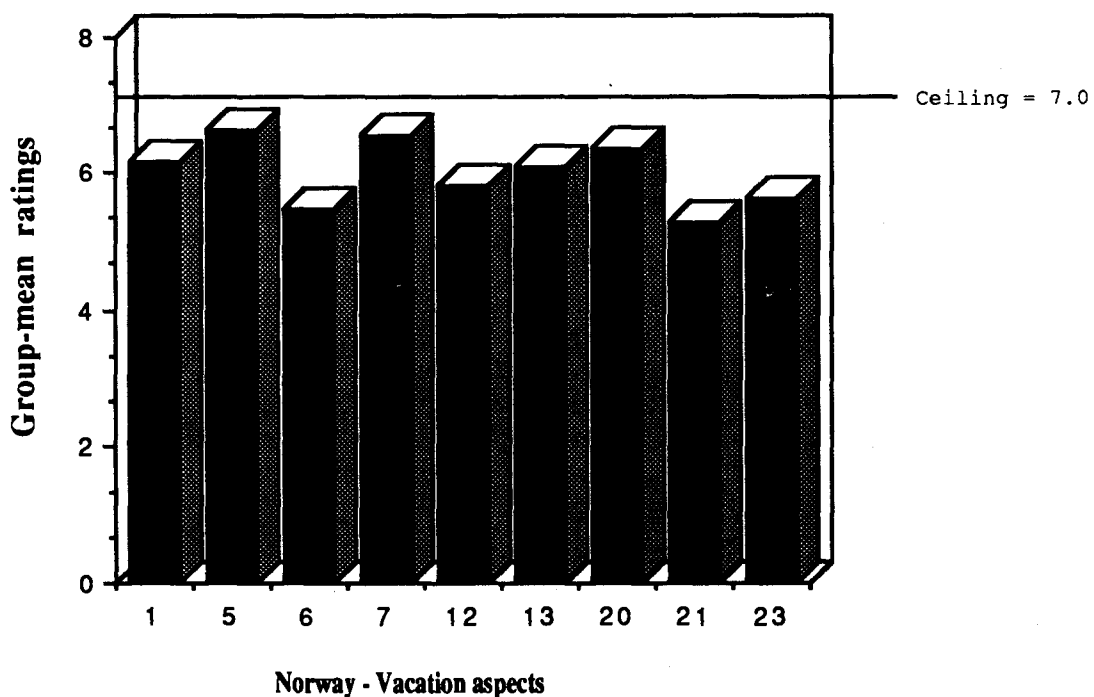


**Figure 9.3: Group-mean ratings for the critical variables using response-scale; 1 to 7**

This alteration of the response-scale did obviously not help much. There is still a ceiling-effect present for several variables, especially aspects 5 and 7. Let us look at kurtosis and skewness for the same variables.
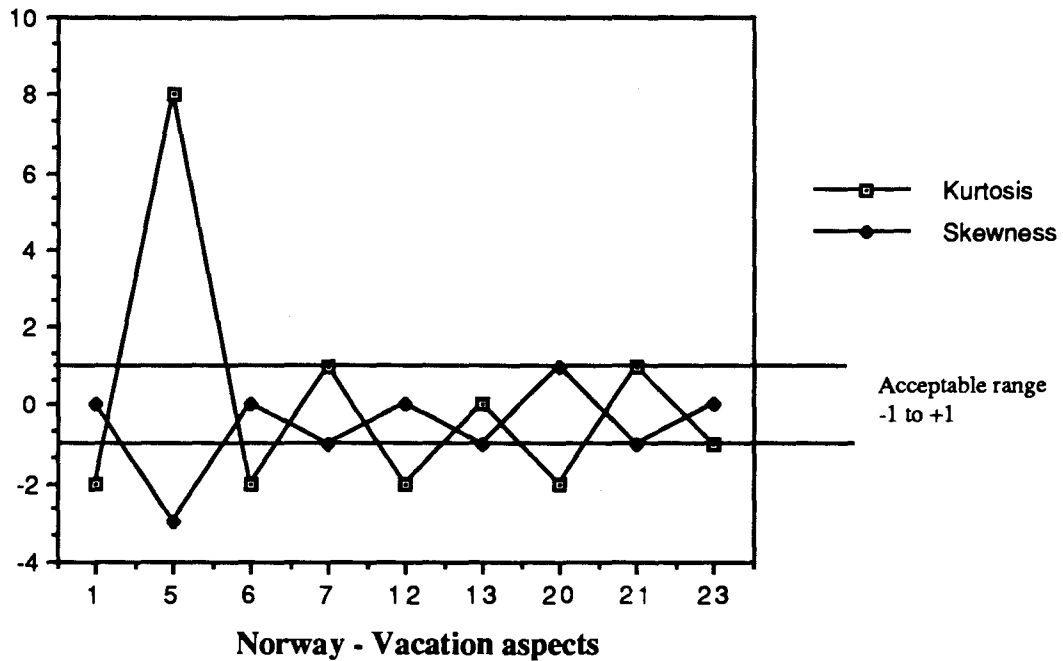
**Figure 9.4: Kurtosis and skewness for the critical variables using response-scale; 1 to 7**

Again, the majority of the variables have kurtosis outside the acceptable range. Skewness, on the other hand, seems to have improved, with aspect 5 as the only variable with an unacceptable skew.

## 9.2. Response-scale; -5 to +5

This group consisted of 10 subjects that were asked to use the following response-scale for their evaluations:

| extremely poor | | very poor | | | so and so | | | very good | extremely good |
|---|---|---|---|---|---|---|---|---|---|
| -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

Notice that this scale is the original response-scale with two more options on each pole, and extreme-labels on both the negative and the positive side. The extra options are there to increase the subject's evaluation-alternatives, while the extreme-labels are

meant to restrain the subject from using the positive end-point unless he or she is absolutely determined to give the aspect a top rating. The group-mean ratings from the group using this response-scale are shown below.
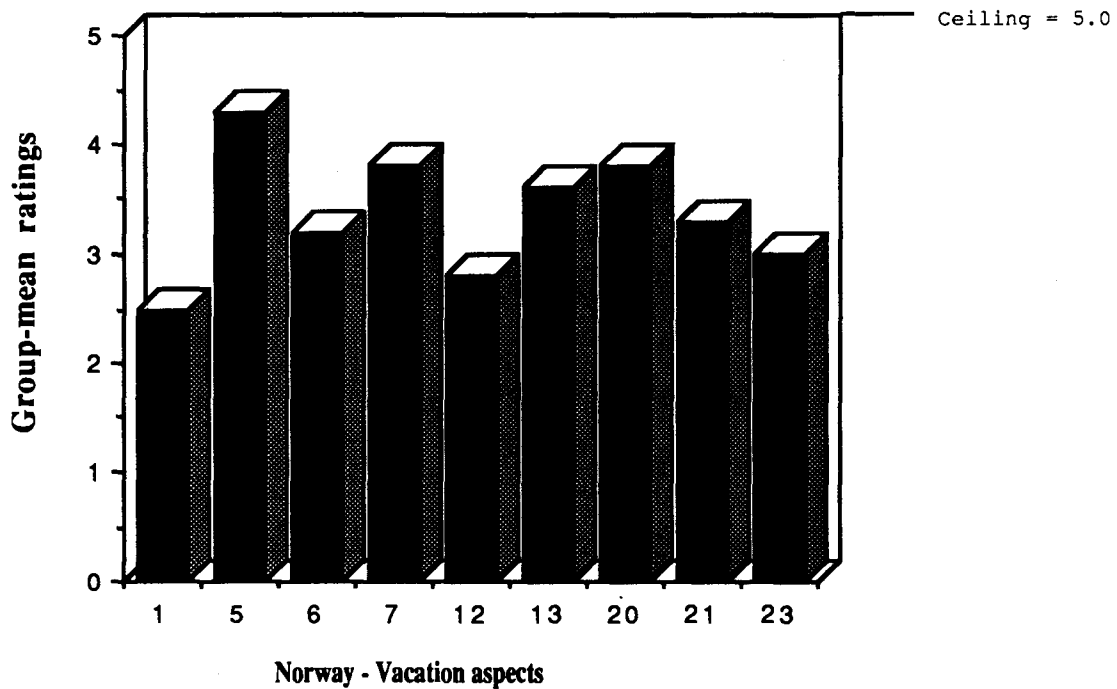


Figure 9.5: Group-mean ratings for the critical variables using response-scale; -5 to +5

This really seems to help. Observe how the distance between the ceiling and the group-mean ratings has increased. A computation of kurtosis and skewness gave the following results.
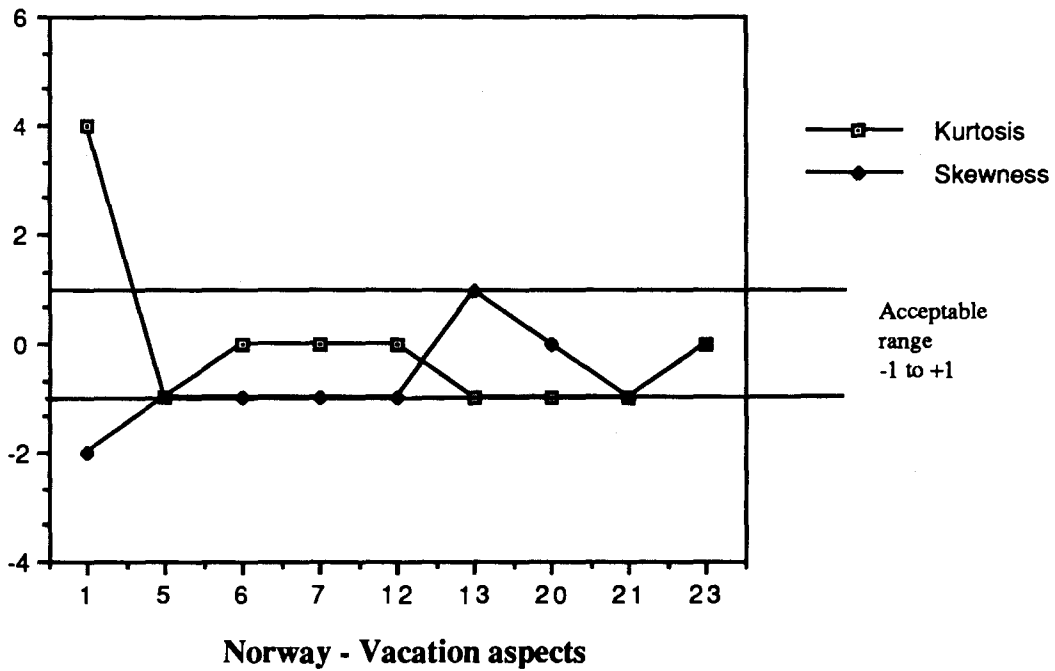
**Figure 9.6: Kurtosis and skewness for the critical variables using response-scale; -5 to +5**

Figure 9.6 indicates, in our opinion, a great improvement. Evaluation 1, the possibility to see and experience nature in Norway, is now the only variable with kurtosis and skewness outside the acceptable range.

## 9.3. Response-scale; -3 to +5

Because the ceiling-effects occurred at the positive end of the scale, an asymmetric response-scale was also tried. The scale is presented below.

| very<br>poor | | | so and so | | | very<br>good | extremely<br>good |
|---|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

Here only the positive end has been supplied with two extra response options and the extreme-label. The left side of the response-scale is identical with the one used in experiments 1 and 2. The response-scale was tested in a group of 21 subjects, and the group-means are shown below.
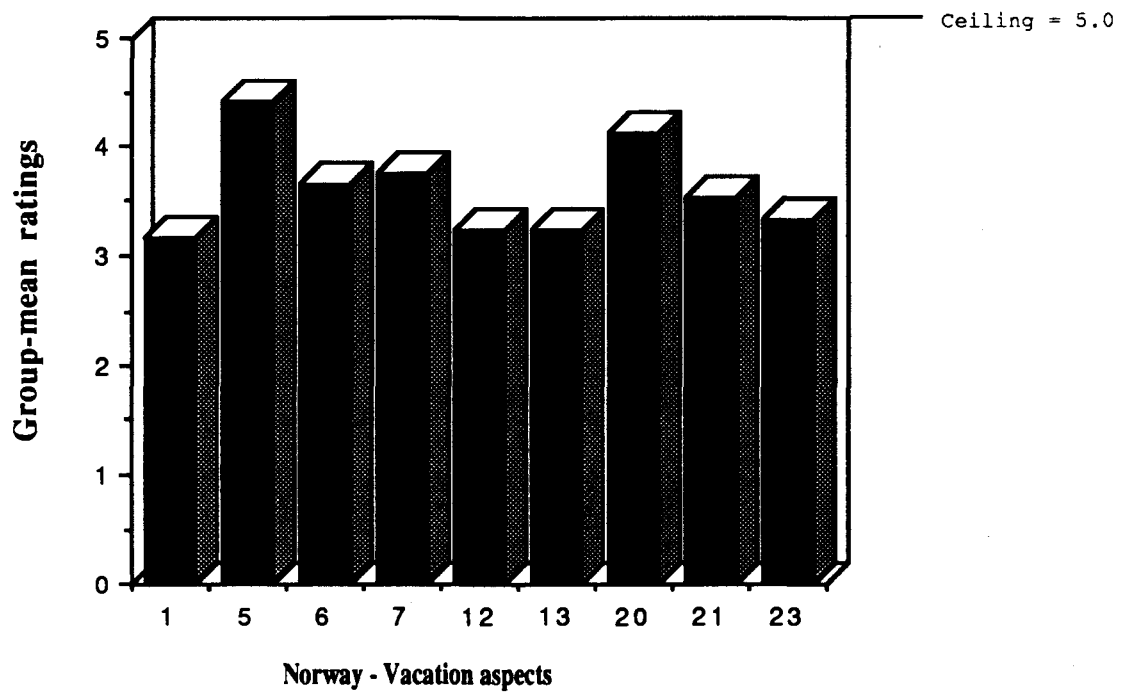
**Figure 9.7: Group-mean ratings for the critical variables using response-scale; -3 to +5**

This scale too, shows a good distance between group-mean ratings and the ceiling. As for kurtosis and skewness, the following values were observed.
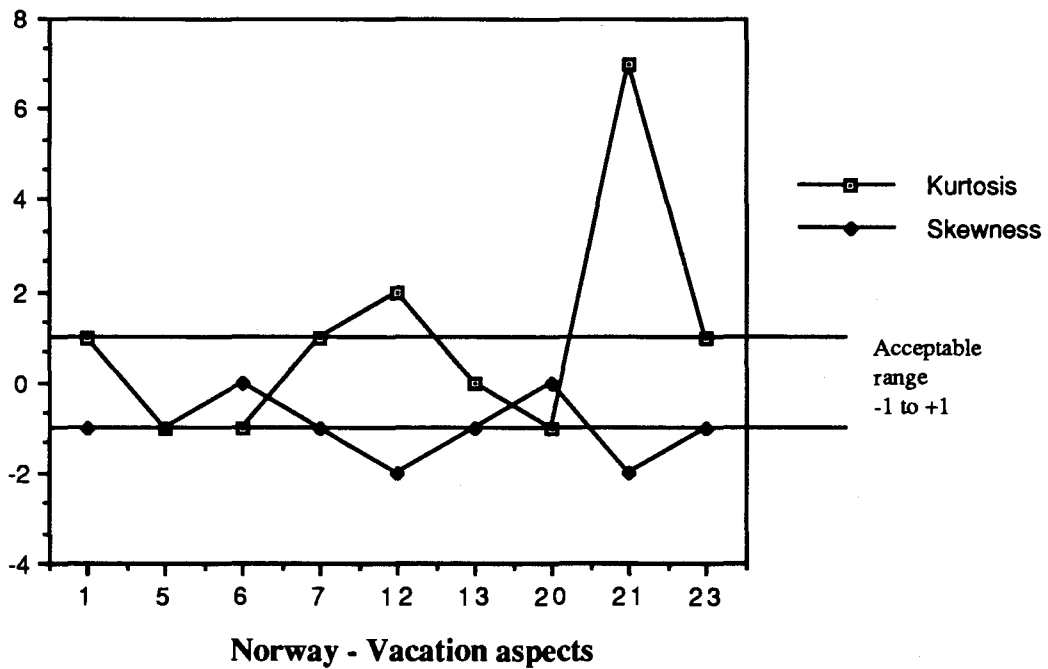
**Figure 9.8: Kurtosis and skewness for the critical variables using response-scale; -3 to +5**

Both kurtosis and skewness are within the acceptable range for all variables except 12, the possibilities to eat well and 21, the possibilities for cultural experiences during a vacation in Norway. Variable 21 is especially troublesome with a kurtosis of 7.0.

Both the -5 to +5 and the -3 to +5 response-scales showed a good distance to the ceiling. To decide which one is the better, a comparison of the two scales was made.

5 — Ceiling = 5.0

Group-mean ratings

4

3

2

1

0

1   5   6   7   12  13  20  21  23

■ Scale -5 to +5
▨ Scale -3 to +5

**Norway - Vacation aspects**
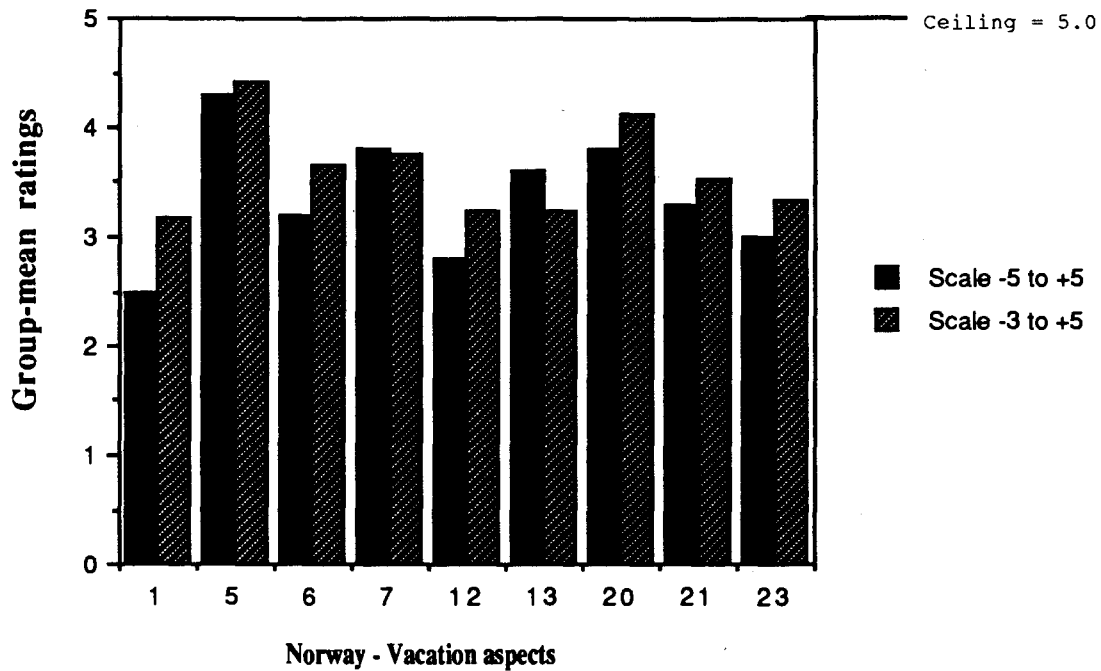
**Figure 9.9:** A comparison of group-mean ratings for the critical variables using response-scale -3 to +5 and response-scale -5 to +5

We can see that for the two most critical variables, #5 and #20, the -5 to +5 response-scale has the lowest group-mean ratings. One could expect that the mean ratings would be the lowest for the -5 to +5 scale, because of the two extra negative response options. However, as one can see from the frequency distribution below, none of the subjects used the negative side of the response scale for the two variables, and we can thus conclude that the -5 to +5 scale seems to be the most suitable for avoiding the ceiling-effect problem.

|  | Variable 5 | | Variable 20 | |
|---|---|---|---|---|
| Value | -3 to +5 scale | -5 to +5 scale | -3 to +5 scale | -5 to +5 scale |
| 2 |  |  |  | 1 (10%) |
| 3 | 5 (23.8%) | 2 (20%) | 3 (14.3%) | 3 (30%) |
| 4 | 2 (9.5%) | 3 (30%) | 10 (47.6%) | 3 (30%) |
| 5 | 14 (66.7%) | 5 (50%) | 8 (38.1%) | 3 (30%) |
|  | 21 (100%) | 10 (100%) | 21 (100%) | 10 (100%) |

**Table 9.1:** Frequency distribution for the two most critical variables in the -3 to +5 and the -5 to +5 groups

As we have already seen, the -5 to +5 scale had acceptable kurtosis and skewness values for all variables except one, while the -3 to +5 scale had two troublesome variables. Kurtosis and skewness thus seem to be better for the -5 to +5, even though the -3 to +5 was tested in a group with 21 subjects as opposed to the 10 subjects in the -5 to +5 group. The greater number of subjects should make it more likely that the observations approximate the normal distribution.

We can conclude that the -5 to +5 seems to be better, both with regard to the distance between the group-mean ratings and the ceiling of the scale, as well as the values for kurtosis and skewness. For the remaining sessions it was thus decided to use the -5 to +5 response-scale for the evaluations.


## 9.4. A re-test of hypothesis 2.4

In hypothesis 2.4 it was predicted that mood would explain more of the variance in the overall evaluation of Norway as a travel destination for the Norway-film group, than would be the case for a group where a pure mood induction procedure had been employed. We tested and found support for the hypothesis in the previous chapter. Mood was found to be a significant explanatory variable in the Norway-film group, but not for the Candid camera group.

The additional groups that were used to test out the various response-scale, can be used to re-test hypothesis 2.4, at least for the Norway-film manipulation. A problem however, is that because the response-scales differ from one group to another, comparisons become somewhat difficult. This problem can be overcome by standardizing all evaluations within each group. Standardization is obtained by subtracting the group-mean rating from each individual rating and dividing the remainder by the standard deviation for the variable in the particular group. Within each group, all variables will thus be distributed with a mean of zero and a standard deviation of one.

As done previously, the evaluations can be grouped together in scales, only this time standardized scores for the evaluation variables are used as opposed to the raw scores used previously. Below, kurtosis and skewness for the various scales are shown.

| Variable | Kurtosis | Skewness |
|---|---|---|
| Nature, peace and quiet-scale | 0.313 | -0.779 |
| Vacation activities-scale | -0.060 | -0.365 |
| General aspects-scale | -0.594 | 0.237 |
| Overall evaluation-scale | 0.693 | -0.376 |
| Mood score | 0.220 | -0.214 |

**Table 9.2: Kurtosis and skewness for the four scales and the mood score**

A total of 57 subjects are included, that is the subjects from group 2 in experiment 2, plus all subjects from the three different response-scale groups. We notice that all scales now have acceptable values for kurtosis and skewness. This means that all scales can be included in the regression analysis. Using the same 57 subjects, a regression analysis was performed where the Overall evaluation-scale was used as a dependent variable, and the remaining scales together with the mood score were included as independent variables.

Dependent variable
Overall evaluation-scale

| Independent variables | B | SE B | Beta | T | Sig. T |
|---|---|---|---|---|---|
| Nature, peace and quiet-scale | 0.1408 | 0.1428 | 0.1349 | 0.986 | 0.3288 |
| Vacation activities-scale | 0.2571 | 0.0760 | 0.4319 | 3.382 | 0.0014 |
| General aspects-scale | -0.0425 | 0.1209 | -0.0422 | -0.351 | 0.7269 |
| Mood score | 0.8864 | 0.3721 | 0.2730 | 2.382 | 0.0210 |
| (Constant) | -0.5401 | 0.4101 | | -1.317 | 0.1937 |

$R^2$ without mood score as independent variable: 0.31026
$R^2$ with mood score as independent variable:    0.37933

**Table 9.3: Results from the regression analysis**

We can see that mood score has increased its T-value from 1.923 to 2.382. Because of the increase in degrees of freedom resulting from the higher number of subjects, the significance of T is now as low as 0.0210 as opposed to 0.0807 when only the subjects

of group 2 were included in the analysis. The analysis is a further confirmation of the significant role mood plays as an explanatory variable when the Norway-film is used as manipulation.

## 9.5. Implications

The purpose of experiment 3 has been to solve the ceiling-effect problem that was identified in experiment 2. This has been done by designing and testing several different response-scales. A comparison between the scales indicated that the -5 to +5 response-scale would be the most suitable. It was thus decided to use this response-scale for the remaining sessions.

The additional groups in experiment 3 provided an opportunity to re-test hypothesis 2.4. Using the data from 57 subjects it was found that mood was now an even more significant variable for explaining the variance in the overall evaluation. The results clearly bolster our earlier conclusions regarding the explanatory power of the mood state variable in the Norway-film group.

# CHAPTER 10

# Experiment 4

The purpose of this experiment was to determine what effects a combination of the two different types of treatment would have. In experiment 4, all groups received combined treatments, i.e. they watched both the Norway-film and one of the pure mood inducing films. The following groups were included in the experiment:

1. Norway-film + Forces and moments (neutral film), n=12
2. Norway-film + The best of candid camera (positive film), n=9
3. Norway-film + Night and fog (negative film), n=12
4. Forces and moments + Norway-film, n=17
5. The best of candid camera + Norway-film, n=15
6. Night and fog + Norway-film, n=20

The manipulations in the last three groups are essentially the same as for the first three, except that the order of the two films has been switched. The purpose of switching the order of the treatments has been to make it possible to discover any differences that would occur because of the order in which the films were shown. After a short introduction, the following instructions were read aloud to the subjects in all groups:

*"In a moment you will be watching a film that is currently being used by the Norwegian Tourist Board. The film is intended to provide information to Americans about Norway as a travel destination.*

*Since I have got the video-equipment here, I will also take the opportunity to run about 15 minutes of a film we are planning to use in another unrelated study. Before we decide whether or not to use this film in the study, we want to find out people's general reaction to the film, and this is the reason why I want you to watch it. After you have seen the two films, you will be asked to complete a questionnaire, where most of the questions are about Norway as a travel destination."*

The questionnaire was very similar to the one used earlier, where the -5 to +5 response-scale was used for all evaluations. As the last part of the questionnaire the subjects were asked to rate the two films, using Isen et. al.'s (1987) manipulation check. This manipulation check consists, as we discussed earlier, of four filler items and a scale where the subjects are asked to rate if the film put them in a positive or negative mood.

## 10.1. Hypotheses

The following hypothesis were formulated and tested in experiment 4:

Hypothesis 4.1

The combination of two positive mood inducing procedures, will have the greatest effect on mood. It is thus expected that the subjects who have been exposed to both Candid camera and the Norway-film will report a more positive mood than in the groups where only one of these films was shown.

This hypothesis can be tested by comparing the mean mood score in the groups that have seen only the Norway-film or Candid camera with the mean mood score in groups 2 and 5 of this experiment.

Hypothesis 4.2

The pure mood induction procedures (the other films) will not lead to any differences in evaluations.

All groups in experiment 4 received the same information about Norway. It is anticipated that only mood induction and information content given by the Norway-film will be regarded as salient information in the evaluation of Norway. Hypothesis 4.2. implies that when it comes to the evaluations of Norway, there should be no differences between any of the groups in experiment 4, nor should they differ from the evaluations made by subjects who have watched only the Norway-film.

Hypothesis 4.3

The mood state created by the Norway-film will explain a considerable amount of the variance in the overall evaluation of Norway as a travel destination, while the mood state created by the other film will have little explanatory power.

It is predicted that only the Norway-film will be considered salient for the evaluation task. If this is correct it is unlikely that the mood state created by the other film will have any importance at all for the overall evaluation of Norway.

## 10.2. Hypotheses testing

Hypothesis 4.1 predicted that the combined treatment of two mood inducing films would have greater effect on mood than only one of the films. In the figure below, group-mean mood scores for the groups in experiment 4 are shown together with those of the Candid camera group and the average of the Norway-film groups.
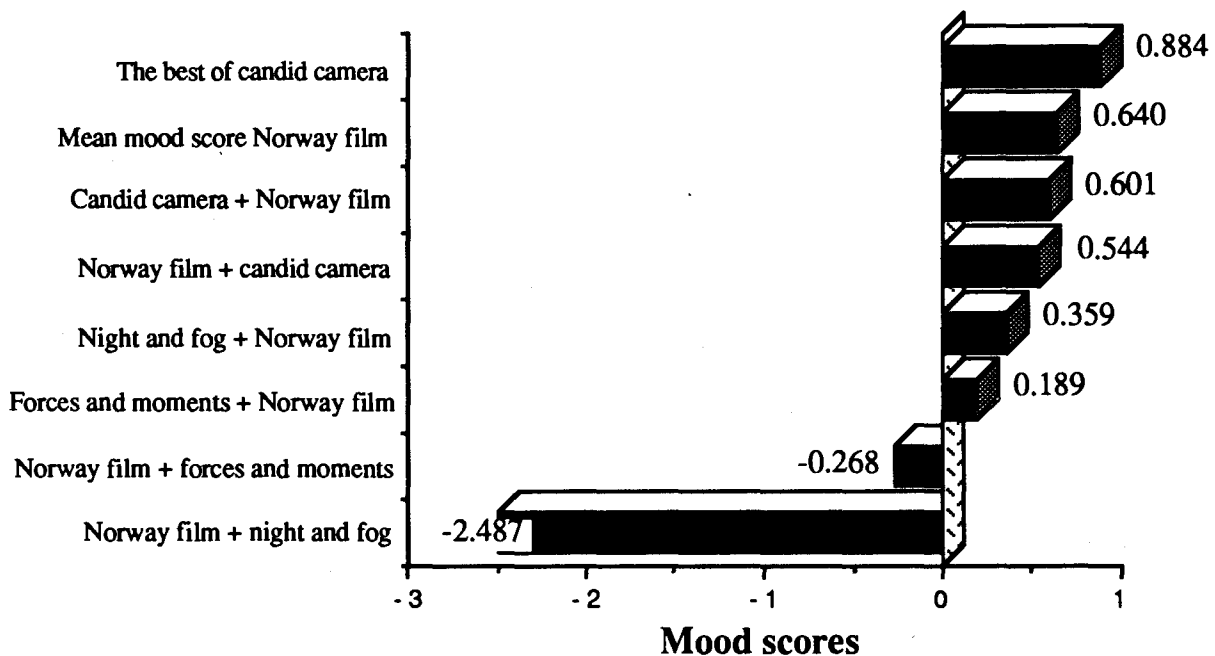


**Figure 10.1: Group-mean mood scores for the different groups**

As the figure clearly indicates none of the groups in experiment 4 report better mood states than the Candid camera group or the average mood score in the Norway-film groups. The two groups where Candid camera was combined with the Norway-film, actually have lower mood scores than the groups where only one of these films was shown. The differences in mood scores between the groups are however not significant.

This suggests that keeping the subjects for the extra 15-20 minutes it takes to show the second film has a negative impact on mood, and that this negative impact more than outweighs the positive effect of an additional positive mood inducing film. There is thus no support for hypothesis 4.1. Watching both of the positive mood inducing films does not have a greater impact on mood, than watching only one of them.

In hypothesis 4.2 it was predicted that none of the groups would show any significant differences in the evaluations of the various aspects of Norway. Nor were they expected to differ from the group where only the Norway-film was shown. To test the hypothesis several oneway-variance-analyses were performed, using the Scheffe-procedure to detect any differences between the groups. All groups in experiment 4 plus the -5 to +5 response-scale group of experiment 3 were included in the analyses. The first analysis, compared the grand-mean, i.e. the mean of all 26 evaluations in the seven groups. The results are presented below.

```
------------------ONEWAY------------------
```

Variable MEAN SCORE NORWAY ASPECTS
By Variable GROUPS


ANALYSIS OF VARIANCE

| SOURCE | D.F. | SUM OF SQUARES | MEAN SQUARES | F RATIO | F PROB. |
|---|---|---|---|---|---|
| BETWEEN GROUPS | 6 | 2.8400 | .4733 | .8143 | .5617 |
| WITHIN GROUPS | 88 | 51.1529 | .5813 | | |
| TOTAL | 94 | 53.9929 | | | |


MULTIPLE RANGE TEST


SCHEFFE PROCEDURE
RANGES FOR THE 0.100 LEVEL -

    4.70   4.70   4.70   4.70   4.70   4.70
THE RANGES ABOVE ARE TABLE RANGES.
THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
    $0.5391 * RANGE * DSQRT(1/N(I) + 1/N(J))$

NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.100 LEVEL


Table 10.1: Output from oneway-variance-analysis aimed at
            determining if there are any differences between the
            groups with regard to evaluations

As we can see from above, there is no indication of significant differences between the groups (F-probability = 0.5617). Furthermore, no two groups were found significantly different at the $\alpha<0.1$ level. These results are in accordance with hypothesis 4.2. As earlier, the various aspects were grouped together in different scales, and oneway-variance-analyses run to see if any groups showed significantly different scale-scores. The results are presented below.

|  | F-ratio | F-significance |
|---|---|---|
| Nature, peace and quiet-scale | 0.5449 | 0.7727 |
| Vacation activities-scale | 1.3251 | 0.2545 |
| General aspects-scale | 1.7233 | 0.1249 |
| Overall evaluation-scale | 1.2996 | 0.2658 |

**Table 10.2: Results from oneway-variance-analyses aimed at determining if there are any differences between the groups with regard to scores on the four scales**

The differences between groups are not significant at $\alpha<0.1$ for any of the four scales. Furthermore, no two groups were found to be significantly different at the $\alpha<0.1$ level using the Scheffe-procedure. This implies that no significant differences between the groups with regard to evaluations have been found, and this may be interpreted as clear support for hypothesis 4.2.

In hypothesis 4.3 it was predicted that only the mood state created by the Norway-film would explain a considerable amount of the variation in the overall evaluation of Norway. The change in mood state caused by the other film was not predicted to have any significant explanatory power. To avoid the problem of asymmetric effects between negative and positive mood states, only the two groups that had seen both the Norway-film and Candid camera were included in the testing of this hypothesis.

A problem in testing hypothesis 4.3., is that the Mood Adjective Check List was completed after the subjects had seen both films. It is therefore difficult to single out the effects of each film. The problem can however be overcome by using Isen et. al.'s manipulation check as a pseudo mood measure. As explained previously, the subjects rated both films using this manipulation check. However, before we can use Isen et. al.'s (1987) manipulation check, it is essential to determine how well this check

corresponds with the mood score computed from the Mood Adjective Check List. In experiments 1 and 2 both the Mood Adjective Check List and Isen et. al.'s (1987) manipulation check were included for the following groups:

| Group | Number of subjects |
|---|---|
| Forces and moments (neutral group, experiment 1) | 16 |
| Candid camera (positive group, experiment 1) | 16 |
| Night and fog (negative group, experiment 1) | 17 |
| Suicide film (group 4, experiment 1) | 16 |
| Norway-film (group 3, experiment 2) | 14 |
| Total | 79 |
| | == |

**Table 10.3: Subjects in experiments 1 and 2 who have completed Isen et. al.'s (1987) manipulation check**

To determine how Isen et. al.'s (1987) manipulation check corresponds with the mood score, a correlation analysis was performed.

---- PEARSON CORRELATION COEFFICIENT ---

MOOD SCORE

| ISEN ET. AL.'S (1987) | .7722 |
|---|---|
| MANIPULATION CHECK | ( 77) |
| | P= .000 |

**Table 10.4: Correlation between Isen et. al.'s (1987) manipulation check and the mood score**

The correlation between the mood score computed from the Mood Adjective Check List and Isen et. al.'s (1987) manipulation check is as high as 0.7722. This indicates that the two measures cover much the same, and it should therefore be acceptable to use Isen et. al.'s (1987) manipulation check as a pseudo mood measure.

To test hypothesis 4.3 a regression analysis was performed where the Overall evaluation scale was used as a dependent variable, while the other scales plus the two manipulation checks were used as independent variables. As mentioned earlier, only subjects from groups 2 and 5 (the Norway-film and Candid camera combination) were included. The results from the regression analysis are shown below.

Dependent variable
Overall evaluation-scale

| Independent variables | B | SE B | Beta | T | Sig. T |
|---|---|---|---|---|---|
| Nature, peace and quiet-scale | -0.0404 | 0.2740 | -0.0387 | -0.148 | 0.8843 |
| Vacation activities-scale | 0.3031 | 0.2119 | 0.4216 | 1.430 | 0.1697 |
| General aspects-scale | -0.0884 | 0.1923 | -0.0885 | -0.460 | 0.6513 |
| Man. check Norway-film | 2.4657 | 0.8920 | 0.5546 | 2.764 | 0.0128 |
| Man. check Candid camera | -2.4250 | 1.2187 | -0.3794 | -1.990 | 0.0620 |
| (Constant) | 7.2372 | 7.2097 | | 1.004 | 0.3288 |

$R^2$ without man. check Norway-film as independent variable: 0.31684
$R^2$ with man. check Norway-film as independent variable: 0.52043

**Table 10.5: Results from the regression analysis**

As we can see from the results above, the manipulation check for the Norway-film is the most significant explanatory variable. This indicates that the mood inducing properties of the Norway-film are extremely important for the overall evaluation of Norway as a travel destination. The mood inducing properties of Candid camera on the other hand does not seem to have any significant impact. These observations are completely in line with the predictions made in hypothesis 4.3. To make a further comparison a new regression analysis was performed, where only the two manipulation checks were included as explanatory variables. The following results came out:

Dependent variable

Overall evaluation-scale

| Independent variables | B | SE B | Beta | T | Sig. T |
|---|---|---|---|---|---|
| Man. check Norway-film | 3.0376 | 0.7722 | 0.6832 | 3.934 | 0.0008 |
| Man. check Candid camera | -1.6765 | 1.1100 | -0.2623 | -1.510 | 0.1459 |
| (Constant) | 7.9123 | 6.8885 | | 1.149 | 0.2636 |

$R^2$ without man. check Norway-film as independent variable: 0.00283

$R^2$ with man. check Norway-film as independent variable:    0.42591

**Table 10.6: Results from the regression analysis where only the two manipulation checks were included as independent variables**

In this analysis the manipulation check for the Norway-film came out as an even more significant explanatory variable. Note that the manipulation check by itself explains less than one percent of the total variance in the Overall evaluation-scale, while the explained variance jumps to more than 42% when the manipulation check for the Norway-film is included. We can thus conclude that there seems to be ample support for hypothesis 4.3.

# 10.3. Implications

In experiment 4 we have used combination treatments, i.e. the subjects watched both the Norway-film and one of the pure mood induction films. To be able to estimate any differences that should arise due to the order of the treatments, the Norway-film was shown first for three groups, and last for the remaining three groups.

According to hypothesis 4.1, the combination of two positive mood inducing films was anticipated to have a stronger effect on mood than only one film had. This hypothesis was, however, not supported in the experiment. One possible explanation is that keeping the subjects for an additional 15-20 minutes triggered a boredom-effect that had a powerful negative impact on the subjects' mood states.

Hypothesis 4.2 predicted that the evaluations would not differ in any groups, nor should they differ from the evaluations in the group that had only watched the Norway-film. We found clear support for hypothesis 4.2. No two groups differed significantly; neither for the grand mean of all evaluations, nor for the evaluations grouped together in scales.

In hypothesis 4.3 it was predicted that the mood state created by the Norway-film would explain a considerable amount of the variance in the overall evaluation of Norway as a travel destination, while the mood state created by the other film would have little explanatory power. Using Isen et. al.'s (1987) manipulation check as pseudo mood measures, clear support for hypothesis 4.3 was found. While the manipulation check for the Norway-film showed a highly significant explanatory power, Candid camera's manipulation check was not found to be a significant explanatory variable.

# Part V

# DISCUSSION

# CHAPTER 11

# Discussion

This chapter consists of four sections. In the first section we will summarize the main conclusions of the previous chapters. The topic for the second section will be an evaluation of the strengths and weaknesses of the chosen research design. As mentioned previously, this will be done using Cook and Campbell's (1979) four types of validity. In the third section we will discuss what implications our empirical study raises, while directions for further research will be given in the fourth and final section of chapter 11.

## 11.1. Summary of previous chapters

In chapter 1 we discussed the background for this dissertation and presented the underlying research questions. It was stated that the dissertation would be positioned at the intersection of two disciplines - consumer behavior and survey methodology. Furthermore it was explained that the main research questions for the empirical part of the dissertation, would be to determine how and when the subjects' mood states may influence their product evaluations. We were particularly interested in assessing the effects of information content and mood induction combined, as opposed to a pure mood induction procedure where no salient information was presented. Chapter 1 was concluded with an overview of mood related research. Here we discussed how researchers in disciplines like philosophy, evolutionary theories, clinical psychology, psychophysiology, personality science, psychometrics, cognitive psychology, consumer behavior, and survey methodology, have been interested in the concept of mood.

Chapters 2 to 4 constitute the theoretical part of this dissertation. The topic in chapter 2 was mood states. The chapter started with definitions and distinctions of terms, and it was argued that most researchers distinguish mood from emotions, by stating that the latter are more intense and full-blown. We also discussed how the different emotions are related, and presented four properties of mood states. These included mood perpetuation, self control of moods, prolonging pleasurable mood states, and

unawareness/unwillingness to see the effects of one's mood. In the final section of chapter 2, intraindividual and interindividual differences in mood were discussed. Here, special emphasis was put on the two dimensions of mood; affect intensity and hedonic level. It was also described how various aspects of mood have been found to correlate with different personality traits.

In chapter 3, the focus was on research that has treated mood as an independent variable. We focused on how mood can influence memory, judgements/evaluations, and behavior. For memory it was established that mood can influence both learning and retrieval. For judgement/evaluations, research points to asymmetric effects of positive and negative moods. Positive moods have most often been found to bias evaluations in a more favorable direction (mood-congruent effects), while the effects of negative moods are more diffuse. It was also stated that there are three different theoretical explanations why mood effects on evaluations can occur. The first explanation, views the evaluation effects as secondary to memory effects, i.e. mood-congruent material will be more accessible in memory. The second explanation is that individuals simplify the evaluation task by using their perceived affective reactions as relevant information. The third explanation states that the evaluation-criteria may be more liberal when the evaluator is in a good mood.

In this chapter it was also outlined that mood influences a host of different behaviors. Most of the research has focused on altruistic behavior. A positive mood has been found to increase subjects' willingness to help. For negative moods, mood-incongruent results have often been found, due to guilt-effects and socialization-effects. Some researchers have studied mood effects on generosity, while others have examined behaviors like willingness to work, ability to resist temptation, and choice-behavior.

The various mood induction procedures that have been employed in studies, was the topic for chapter 4. It was argued that these procedures can be divided into the three groups; true experimental procedures, quasi experimental procedures, and observational studies. The majority of mood-studies can be classified as true experiments. In some of these studies mood is induced using some form of accessory. The following procedures were included in this group: Mood induction procedure disguised as a test, audiovisual stimuli, gifts, physical stimuli, actual experiences, attractiveness of another person, stories, and techniques where several stimuli are used in combination. For the other type of true experimental procedures, mood is induced through active participation of the subjects. Here, procedures like manipulating

subjects' facial expressions, description/recall of earlier life events, the Velten procedure, self-generated thoughts, word associations, and hypothetical situations were discussed.

Several quasi experimental procedures have been used to induce mood. We divided these procedures into three groups. In the first group mood is manipulated by the experimenter. Most of these studies are carried out in natural settings, which reduces the possibility to assign treatment on a randomized basis. The second group of quasi experimental procedures consists of natural experiments where the researcher has been able to obtain unobtrusive measures of the magnitude of the treatment. In the last group too, mood manipulation is caused by factors beyond the researcher's control, but here it has not been possible to obtain unobtrusive measures. To estimate the mood inducing effect, the researcher will thus have to rely on self-report measures from the subjects.

In a fairly large number of studies mood induction has been omitted all together. These studies are labeled observational studies which means that the focus has been on the natural variation of the subjects' mood states. In chapter 4 it was pointed out that the advantage of observational studies is the possibility of both intraindividual and interindividual comparisons, but because there is no systematic manipulation of mood, conclusions about causality become troublesome.

Design and measurement issues were discussed in chapters 5 and 6. In chapter 5 we presented the underlying research model. We also discussed why Norway as a travel destination was chosen as a product. A description of the subjects and the films employed in the study was given, and the chapter was concluded with an overview of the four experiments.

In chapter 6, we started by presenting the mood measure. Next, we discussed the computational procedure for the knowledge score that was used to estimate the subjects' familiarity with Norway. The third measurement issue concerned the evaluations of Norway. Three methods were used to compare the evaluations in one group with that of another experimental group. The first was to compare the individual aspects, the second to compare the grand mean of all evaluations, while the last method was to group the aspects together in summated scales. The procedure used for constructing and testing these scales was discussed, and we also gave a presentation of the four scales with their items and their statistical properties.

The four experiments constitute the empirical analysis, and the hypotheses and results from these experiments were presented in chapters 7 to 10. In the first experiment, which was discussed in chapter 7, we compared one positive mood group and two negative mood groups with a neutral control group to see how the subjects' evaluations were influenced by their mood states. We detected subtle, but consistent mood biases for both positive and negative moods. As hypothesized the biases were in a mood-congruent direction for the positive mood group. For negative mood, no direction was predicted, but the results indicated discongruent mood effects for both of the negative mood groups. However, even though there were differences between the various groups, the overall response pattern seemed to be the same in all groups.

With regard to familiarity, it was predicted that subjects who had a high level of knowledge about Norway would be less likely to be influenced by their current mood states in the evaluations they made about Norway. In experiment 1, we found no support for this hypothesis.

Experiment 2 was discussed in chapter 8, and the focus in this experiment was on the film "Norway, Europe never looked so good". As predicted we found that the film had positive mood inducing properties. It was also evident that the Norway-film led to more favorable evaluations of Norway. But, the film did not have equal effect on all evaluations. In accordance with our hypothesis the greatest changes occurred for those aspects that had a low score in experiment 1 and were fully covered in the film, while aspects with initial high ratings and poor coverage in the Norway-film showed only insignificant changes.

In experiment 2 it was predicted that using the Norway-film, mood would explain more of the variance in the overall evaluation of Norway as a travel destination, than would be the case for a pure mood induction procedure. This is because of the informative function of mood states. We found support for the hypothesis, and there were also indications that while the pure mood induction procedure seemed to influence all aspects, the mood effects of the Norway-film were restricted to the overall evaluation of Norway as a travel destination.

In experiment 2, a -3 to +3 response-scale was used. For some of the evaluation-variables, ceiling-effects occurred, i.e. the answers were clustered towards the +3 end of the scale. To eliminate this ceiling-effect problem, several different response-scales were designed and tested in experiment 3. A comparison of the results indicated that

the original scale with two more response options on each pole, and extreme-labels on both the negative and the positive side would be the most suitable. It was thus decided to use this response-scale for the remaining sessions.

The purpose of experiment 4 was to determine what effects a combination of a pure mood induction film and the Norway-film would have. It was hypothesized that a combination of two positive mood inducing films would have the greatest effect on mood. However, we found no support for this hypothesis. The results actually indicated that reported mood was lower for the combination of the two films than was the case for groups that had watched only one of the films. The second hypothesis concerned the subjects' evaluations. It was predicted that none of the groups would differ in the evaluations they made about Norway. Nor were they expected to differ from groups that had only watched the Norway-film. The rationale for this hypothesis was that only the information presented in the Norway-film would be considered as salient for the evaluation task. If this was true, the mood state induced by the other films would not have any impact on the subjects' evaluations. The hypothesis was supported. No two groups differed significantly; neither for the grand mean of all evaluations, nor for the evaluations grouped together in scales.

The third hypothesis of experiment 4 predicted that the mood state created by the Norway-film would explain a considerable amount of the variance in the overall evaluation of Norway as a travel destination, while the mood state created by the other film would have little explanatory power. The rationale was the same as for the second hypothesis, i.e. only the information presented in the Norway-film would be considered as salient. We found clear support for this hypothesis. While the mood states induced by the Norway-film showed a highly significant explanatory power, the mood induced by the positive pure mood induction film was not found to be a significant explanatory variable.

## 11.2 Strengths and weaknesses of the chosen research design

In this section the strengths and weaknesses of the chosen research design will be evaluated using Cook and Campbell's (1979) four types of validity. The first type is called statistical conclusion validity and concerns the validity of the observed correlations. Internal validity is the second type. Once it has been established that two variables covary, the problem is to decide the causal relationship between the two. The internal validity requirement is satisfied if, and only if, our inferences about causality are correct. The third type of validity is called construct validity of putative causes and effects, and concerns the relationship between the empirical- and the theoretical level in the study. In experiments the observed causal relations occur at the empirical level. However, to be able to compare our results with those of other experiments it is necessary to relate the observations to more general constructs. Construct validity of putative causes and effects involves the fit between the empirical observations and referent constructs. In other words conclusions about causality will not only have to be correct at the empirical level, the inferences we make at the theoretical level must also be true.

The fourth and last type of validity is labeled as external validity. This validity-type concerns the aspect of generalization. Cook and Campbell (1979) distinguish between two types of generalizations. The first type has to do with generalizations to particular target persons, settings, and times, while the other and more commonly used type is to generalize across persons, settings, and times.

Cook and Campbell (1979) have developed an extensive check-list of possible threats to the four types of validity. In the remainder of this section, we will discuss each of these threats with regard to this empirical study.

### Statistical conclusion validity

Low statistical power can be a threat to statistical conclusion validity when sample sizes are small, and $\alpha$ is set low. In our study there were on average about 15 subjects in each treatment-group. As we recall from chapter 7, this relatively low number of subjects constituted a problem in comparing the negative mood group with the neutral control group. We found that the grand mean of all evaluations was higher in the negative group, but the difference was not significant. With a higher number of subjects in each cell the problem of insignificant differences would probably have been

solved. In experiment 2, we performed separate regression analyses for groups with as few as 15 subjects. Although the number of subjects is reflected in the significance of the parameter estimates, a larger number of subjects in each cell, would undoubtedly have been preferable.

Violated assumptions of statistical test is another threat to statistical conclusion validity. To avoid this threat, results from the non-parametric Mann-Whitney test have throughout the chapters, been reported in addition to results from the T-test. In some analyses parametric methods have been used on ordinal scaled variables. An example is the use of factor analysis for constructing the mood score. However, this procedure is in accordance with established research practice, and the factor analytic approach is indeed suggested by Nowlis (1965) who designed the Mood Adjective Check List. In regression analysis, only normally distributed variables can be included. To satisfy this criterion, we recall that variables showing unacceptable values for skewness and kurtosis were excluded.

Data-fishing and the error rate problem can be a threat to statistical conclusion validity. By comparing the groups along 26 evaluations, chances are that at least one of these evaluations were statistically different just out of pure coincidence (using an $\alpha$ of 0.05). To eliminate this problem we grouped the variables together in scales, and supplemented the analysis with a comparison of the grand mean of all evaluations.

Cook and Campbell (1979) mention low reliability as a threat to statistical conclusion validity. In chapter 6 we designed and tested the reliability of the four scales, and as we recall from this chapter all scales were found to be reliable.

The reliability of treatment implementation may be a problem if more than one person is responsible for implementing the treatments. Since all sessions were conducted by the same person, this threat is not relevant for our study. To eliminate the threat of random irrelevancies in the experimental settings, all sessions were performed using the same laboratory setting. The threat of random heterogeneity of respondents was reduced by using only college students in all groups, and assigning treatments on a randomized basis.

To conclude this discussion, we have established that low statistical power was a problem in some sessions, and that the use of parametric methods on ordinal scaled variables may be considered somewhat questionable. Otherwise, the criteria for statistical conclusion validity should be fully satisfied.

## Internal validity

Cook and Campbell (1979) list a number of possible threats to internal validity. History is one of the threats, and occurs if the dependent variable is affected by outside forces. In our study this threat was eliminated by using an isolated laboratory setting. Maturation can be a threat if the respondents grow older, wiser, or more experienced during the experiment. Testing effects may occur if dependent variables are measured several times, while instrumentation is a threat if the measurement instrument is changed during the experiment. It seems obvious that neither maturation, testing nor instrumentation should constitute any problem in our study. Statistical regression may be a threat if the treatment is based on a pre-test score. Since all treatments in the study were assigned on a randomized basis, statistical regression can be ruled out as a threat. The same can be said for threats due to selection. Mortality is a threat if subjects drop out from the experiment, a problem that was not encountered in our study. Cook and Campbell (1979) also mention a list of threats that are particularly relevant in field settings. These include diffusion or imitation of treatments, compensatory equalization of treatments, compensatory rivalry by respondents receiving less desirable treatments, resentful demoralization of respondents receiving less desirable treatments, and ambiguity about the direction of causal influence. None, of the above-mentioned factors constituted any threat to internal validity in our study, and will consequently not be discussed any further.

We can thus conclude that the chosen research design has a high score when it comes to internal validity.

## Construct validity of putative causes and effects

Mono-operation bias is listed as a threat to construct validity. In the study we made an attempt to avoid this bias by using multiple measures. In constructing the mood score, for instance we used the answers on 35 mood adjectives. Similarly, in the evaluations of Norway, we included 26 different aspects. When we designed the scales, we made sure that all scales contained at least 4 items. This was done to avoid the threat of a mono-operation bias. As we recall from chapter 10, Isen et. al.'s (1987) manipulation check was used as a pseudo mood measure in experiment 4. This manipulation check contains only one item, and could thus be affected by a mono-operation bias.

However, before using this single item manipulation check, we assessed to what extent the manipulation check corresponded with the original mood measure. By making this comparison, the possibilities of a mono-operation bias should be reduced.

A more serious threat, is undoubtedly that of a mono-method bias. In all experiments only films have been used as mood induction stimuli. This has been done to reduce any variance that could occur due to different methods, and to keep the number of different experimental conditions at a moderate level. However, by solely relying on films as mood induction procedures, it is difficult to rule out the threat of a mono-method bias.

When it comes to measurement, all variables in the study were based on self-report measures. From the literature (see e.g. Bradburn and Sudman, 1974) it is well known that self-report measures may be sensitive to response effects, i.e. factors that make the reported answers deviate from the true values. It would thus have been an advantage if the self-reported measures had been supplemented by more unobtrusive measures. Some studies concerning mood (see e.g. Larsen, 1984; and Clark, 1982) have for instance employed measures of physiological arousal (puls rate and catecholamine excretion) to supplement self-report measures. Results from these studies, however, indicate a high level of concordance between the self-report measures and the physiological measures.

All subjects in our study, were selected from the same "subject pool" and the treatment in each group was assigned on a randomized basis. This implies that if there is mono-method bias in the data, chances are that the bias will be the same for all groups. If this is true, the comparisons between groups will not be affected by the mono-method bias, and the potential bias will therefore not constitute any serious threat to the construct validity of putative causes and effects.

Hypothesis-guessing may be a problem for construct validity in some studies. To reduce this threat all experimental manipulations were disguised as a pre-test for another unrelated study. It is therefore unlikely that the subjects were aware of the real purpose of the mood manipulations. As mentioned previously, we talked to some of the subjects afterwards, and none of them had suspected any connection between the mood manipulation and the evaluation task.

Evaluation apprehension is listed as a threat to construct validity. All respondents were anonymous in our study and no evaluation apprehension should therefore exist. Experimenter's expectancies is another threat that may be particularly serious in studies where the experimenter delivers the treatments to respondents, and where the observations rely on subjective judgements. In our study, experimenter's expectancies will hardly be any threat for several reasons. First, interaction with the subjects was not necessary because films were used as experimental manipulations. Secondly, observations were based on self-report measures and consequently not open to interpretation. Thirdly, for negative mood induction no certain effects were hypothesized.

Interaction of different treatments could be a threat in experiment 4, where two treatments were combined. However, we recall that the purpose of this experiment was to determine how the two treatments in fact did interact. The isolated effect of each of the treatments were measured in the earlier experiments, and any interaction effect would thus be possible to measure.

Inadequate pre-operational explication of constructs may be a problem in some studies. In the area of mood related research, however, there seems to be comparatively good agreement on how to operationalize key-variables and constructs. Furthermore, very few operationalizations in our study were made ad hoc. As mentioned previously, the majority of the evaluation variables were sampled from an earlier study, while the Mood Adjective Check List and the personality scales have been thoroughly tested by other researchers.

Cook and Campbell (1979) mention confounding constructs and level of constructs as a threat to construct validity. This threat may constitute a problem in our study. As discussed earlier, the relationship between mood and evaluations does not appear to be a linear one. The results we obtain, will consequently be affected by the intensity of the manipulation. This makes it difficult to compare the results from our study with those from other studies, simply because the mood manipulations may be of different types or intensities. The problem of making comparisons between different studies could be solved if all studies used the same type of mood measures. An increasing number of studies use Nowlis' (1965) Mood Adjective Check List. However, far too many researchers still rely on ad hoc measures, made particularly for their own study.

In studies using pre- and post-test observations for the same studies, interaction between testing and treatment may pose a threat to construct validity. As we recall from chapter 8, a consistency-bias was detected for the subjects who completed both pre-treatment and post-treatment mood measures. This problem was overcome by comparing the pre-treatment scores with scores from a post-treatment only group. Consequently, there should not be any interaction between testing and treatment. Cook and Campbell (1979) mention restricted generalizability across constructs as a threat to construct validity. In our opinion this should not be any problem in this study.

To conclude this discussion we have established that the study has a tolerably good score on construct validity of putative causes and effects, even though some of the threats discussed above, may reduce the score somewhat.


## External validity

Cook and Campbell (1979) mention three threats to external validity. The first is labeled interaction of selection and treatment, and this threat implies that the results cannot necessarily be generalized to all groups of people or to the general population. This threat is undoubtedly present in our study. The subjects were all undergraduate students in business administration, and thus a very homogeneous group. In other words, the subjects did not constitute a representative sample of the general population, and this may reduce the generalizability of the results obtained in our study.

The second threat concerns an interaction between setting and treatment. In our study, a laboratory setting was employed. This is a relatively artificial setting, which implies that product evaluations in real life probably come about differently than in the experimental situation. For instance, in the study subjects were asked to evaluate Norway one aspect at the time. In real life, a less structured evaluation procedure is more common. Furthermore, in real life the evaluator will have the chance to consult others, while in our study the subjects were forced to carry out their evaluations all by themselves.

The third and final threat to external validity is the interaction between history and treatment. This may be a threat if the study is conducted on special days, like for instance when a president dies. In our opinion, this threat will not be particularly apparent in our study. All sessions were conducted on ordinary week-days, in the middle of the term, i.e. in periods where the students were not particularly occupied with preparations for their final exams.

The threats to external validity are thus mainly associated with using a homogeneous sample and an artificial laboratory setting. Chances are that these factors impose such a serious threat to external validity that the results cannot necessarily be generalized to the general population or to actual product evaluations in real life. In other words, by using a student sample and a laboratory setting, we have increased the first three types of validity at the expense of external validity. This is a fairly common situation when choosing a laboratory-type design. Laboratory environments and homogeneous samples provide the researcher with maximum control over possible disturbing factors. A consequence of the artificial nature of a laboratory, however, is the loss of generalizability to more realistic situations (Kinnear and Taylor, 1987).

The strengths and weaknesses of the research design are summarized in the table below.

## Statistical conclusion validity

Key question: Are the observed correlations valid?

| Threats | Score in this study |
| --- | --- |
| Low statistical power | ? |
| Violated assumptions of statistical tests | ? |
| Fishing and the error rate problem | + |
| Low reliability of measures | + |
| The reliability of treatment implementation | + |
| Random irrelevancies in the experimental setting | + |
| Random heterogeneity of respondents | + |

## Internal validity

Key question: Are our conclusions about causal relationship valid?

| Threats | Score in this study |
| --- | --- |
| History | + |
| Maturation | + |
| Testing | + |
| Instrumentation | + |
| Statistical regression | + |
| Selection | + |
| Mortality | + |
| Diffusion or imitation of treatments | + |
| Compensatory equalization of treatments | + |
| Compensatory rivalry by respondents receiving less desirable treatments | + |
| Resentful demoralization of respondents receiving less desirable treatments | + |
| Ambiguity about the direction of causal influence | + |

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**Construct validity of putative causes and effects**

Key question: Is the relationship between the empirical level and the theoretical level valid ?

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| Threats | Score in this study |
|---|---|
| Mono-operation bias | + |
| Mono-method bias | ? |
| Hypothesis-guessing | + |
| Evaluation apprehension | + |
| Experimenter expectancies | + |
| Interaction of different treatments | + |
| Inadequate pre-operational explication of constructs | + |
| Confounding constructs and level of constructs | ? |
| Interaction of testing and treatment | + |
| Restricted generalizability across constructs | + |

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**External validity**

Key question: To which categories of people, what settings, and what periods of time can the results be generalized to?

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| Threats | Score in this study |
|---|---|
| Interaction of selection and treatment | - |
| Interaction of setting and treatment | - |
| Interaction of history and treatment | + |

+ indicates that the threat does not constitute a problem for this study

? indicates that the threat may constitute a problem for this study

- indicates that the threat definitely constitutes a problem for this study

**Table 11.1: Summary of the strengths and weaknesses of the research design**

## 11.3. Implications

As mentioned earlier, our research can be seen both in the perspective of consumer behavior as well as survey methodology. For consumer behavior it could be argued that because mood seems to bias evaluations, mood induction could be a useful tool in advertising and market communication. However, the results from experiment 1 does not necessarily support this argument. As we recall from chapter 7, the purpose of experiment 1 was to determine the pure mood effects, i.e. changes in evaluations that occurred as a result of shifting mood states. The mood effects detected in this experiment, were rather marginal with group-mean differences for only a few variables. When the variables were grouped together in various scales, not all scales showed significant differences between the experiment- and the control-group. It is also worth noticing that the duration of the stimulus exposure was rather long, 15 minutes as opposed to a typical TV-commercial of 15 to 30 seconds. The evaluations were in addition measured only minutes after the mood induction procedure. It may be that if a longer interval was chosen between mood induction and evaluations, the group differences would not have been detectable. It is also likely that because the mood stimuli had no informational content about Norway, no permanent association between mood state and "Norway as a travel destination" was established in the subjects' memories.

Occasionally, the use of negative mood inducing messages in campaigns against drug abuse, smoking etc. has been discussed. The idea is that these messages will scare the viewers away from indulging in such hazardous activities. Seen in relation to the results from experiment 1, there is no guarantee that such an effect will occur. In both negative mood groups, the evaluations were biased in an upward direction and this will, in our opinion, reduce the applicability of using negative mood inducing messages. When this is said, it must be stated that the mood discongruent results from experiment 1, will not necessarily apply if the message has a strong informational content. In other words, if the campaign is against drug abuse and the negative mood induction is coupled with explicit information about the dangers of using drugs, there might be mood-congruent changes in the viewers' attitude towards drug abuse.

For the discipline of survey methodology, the main implications from experiment 1, are that respondents' mood states do not always represent a serious threat to validity. Although there were differences between the groups in their evaluations, the overall response pattern was very similar in all groups. We recall that the coefficient of concordance was higher than 0.86, and taking the small sample sizes into account (roughly 16 subjects in each group), any higher concordance would be difficult to obtain even if the groups were drawn from the same population, simply because of sampling variance.

In experiment 1, the subjects' factual knowledge about Norway was rather marginal. We had predicted that subjects with a high level of knowledge would be less likely to be influenced by their current mood states in their evaluations, but no support was found for this hypothesis. This could have led us to conclude that product-familiarity was of little importance. However, by comparing the subjects' evaluations with those made by actual tourists in Norway, we were able to determine that the subjects had a reasonably clear stereotypical impression of the Norwegian tourist product . In other words, even though the subjects had little factual knowledge about Norway, their familiarity with the travel product was fairly high.

This finding has the important implication that we just cannot always equate familiarity with level of knowledge. Even though the subjects had little factual knowledge about Norway, they appeared to be familiar with Norway as a travel destination. In other words, the subjects seemed to have a stereotypical impression of Norway, and it is likely that this stereotype and not their mood states provided most of the basis for their evaluations.

The last important implication from experiment 1, concerns the effects of the two negative mood inducing films. In the figure below, mood scores and the grand means of all evaluations in the various groups are shown.
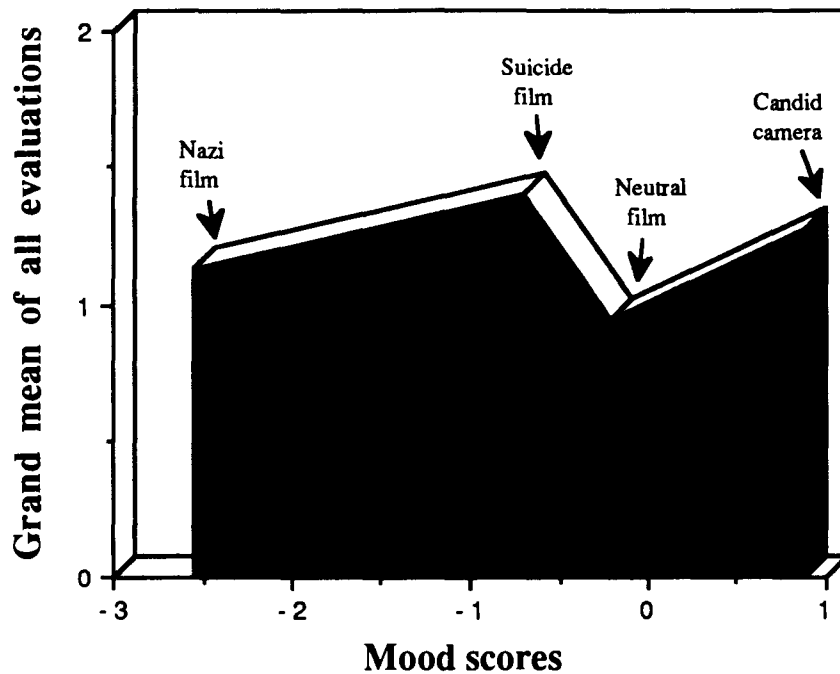
Figure 11.1: Mood scores and evaluations in the four groups of experiment 1

Notice that evaluations after mood inductions are more favorable than evaluations in the neutral control group. However, if the negative manipulation gets strong enough, as with the Nazi film, the evaluations start to decline. In the figure above, we have four points along the mood score-axis, one for each film. This is not enough to estimate the true relationship between mood and evaluations, but nevertheless gives us an opportunity to speculate on how this underlying relationship might be. Using our four points, the relationship might be something like this:

## EVALUATION BIAS

A

B

NO MOOD INDUCTION

NEGATIVE
MOOD
INDUCTION

POSITIVE
MOOD
INDUCTION

C
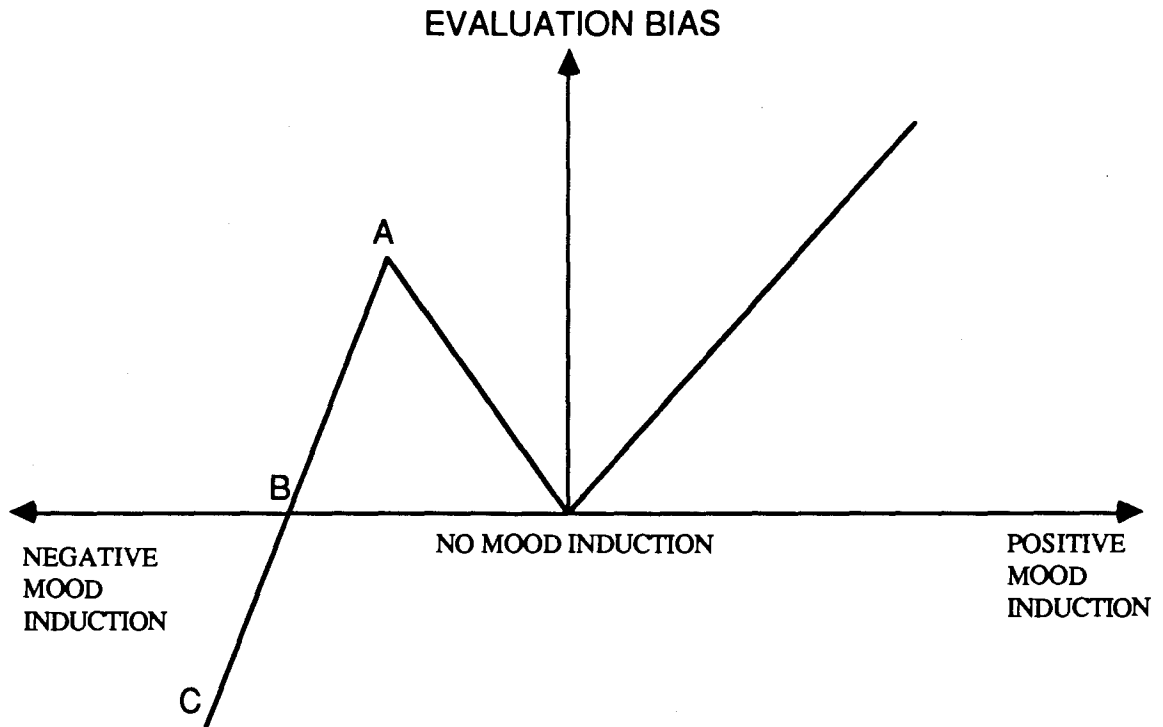
**Figure 11.2: A possible relationship between mood and evaluations**

For low-intensity moods, evaluations will be biased upwards regardless of the valence of the mood state. This corresponds to what Clark (1982) has termed "autonomous arousal". If the negative mood gets stronger, however, the evaluation bias will change direction, which means that we will observe mood-congruent effects for powerful negative mood states.

The relationship depicted above, is of course rather speculative. Nevertheless, such a relationship could explain the conflicting results that have been reported for negative moods. If the intensity of the manipulation is as marked in point A, the researcher will observe discongruent mood effects on evaluations. A stronger manipulation as for point B, would reveal no mood effects, while a strong negative manipulation as for point C, would lead to congruent mood effects. The problem of non-linear relationships has been discussed as a threat to construct validity of putative causes and effects in the previous section. In the next section we will discuss how further research can be conducted to estimate the relationship between mood states and mood effects on evaluations.

It is unlikely that mood effects will be determined by mood-intensity alone. The type of object that is being evaluated, and perhaps the type of mood induction procedure that is being used, will probably be important determinants for what mood effects we can expect to observe. The mood-intensity explanation suggested above should nonetheless, be able to resolve some of the confusion that today seems to exist with regard to the effects of negative moods on evaluations.

In experiment 2, we tried to assess the effects of a stimulus that combined mood induction with information about the target object. As expected, we found that the subjects who watched the Norway-film evaluated most aspects of Norway significantly higher than all groups in experiment 1. This was probably primarily because of the informational content of the film. However, the data indicated that mood was a more important explanatory variable for the overall evaluation in the Norway-film group, than was the case for the pure mood inducing film. This finding has the important implication that mood effects can be reinforced by informational content. In other words, if mood induction is linked with informational content chances are that this will increase the effect of the mood induction. These findings should provide important guidelines for marketing practice. To obtain the maximum effect of mood inducing market communication, mood induction should be combined with information about the product that is being advertised.

We have interpreted the above-mentioned findings as support for Schwarz and Clore's (1983) notion about the informative function of mood states. This function implies that individuals simplify the evaluation task by using their perceived affective reactions as relevant information. If individuals attribute their mood to a source that is highly relevant for the evaluation task, mood is expected to influence evaluations, while mood induced by irrelevant factors will be discredited. The effect of the informational content is to establish an attribution-link between mood induction and evaluation task, and thus cause a shift in evaluations.

The results of experiment 2 were bolstered by those of experiment 4. In this last experiment we combined treatments, i.e. all subjects watched the Norway-film in addition to one of the pure mood inducing films. As anticipated we found no significant differences in evaluations between the groups. Nor did any of them differ from groups that had only watched the Norway-film. This indicates that only the Norway-film was considered relevant for the evaluation task, and that the mood inducing properties of the other films had no effect on the evaluations. In experiment 4, we also performed regression analyses where the mood inducing effects of the

various films were used as independent variables to explain the variance in overall evaluation of Norway as a travel destination. As anticipated, the mood inducing effect of the Norway-film came out as a very powerful explanatory variable, while that of the other film hardly explained any variance at all. This is a further indication of the importance of linking mood induction to informational content.

In experiment 3, we designed and tested a number of different response-scales in order to solve a ceiling-effect problem. The results from this experiment have no substantive implications. However, the procedure used in experiment 3, can be used as a guideline for solving ceiling-effect problems, and will thus have important methodological implications.

To conclude this discussion we have established that this study has important implications for both consumer behavior and survey methodology. For the discipline of consumer behavior the results indicate that mood indeed can be used as a marketing tool for shifting consumers' product evaluations in a positive direction. A requirement for successful use, however, is that mood induction is combined with information about the product. The effects of using negative mood inducing communication stimuli in e.g. campaigns against e.g. drug abuse or smoking appear to be more questionable, at least in cases where informational content is absent. This is because of the asymmetric effects of positive and negative mood states. In an attempt to explain this asymmetry we have proposed a mood-intensity explanation.

For the discipline of survey methodology, we have found that mood states may bias evaluations and thus constitute a source of response effects. However, if the respondents are familiar with the object they are asked to evaluate, or if they have a clear stereotype of the object, chances are that the mood biases will be rather marginal, and thus not represent a serious threat to the validity of the survey measurements.

## 11.4. Directions for further research

In the discussion of strengths and weaknesses of the chosen research design, we pointed out a number of limitations of this study. It is our opinion that most of these limitations can be overcome by further research.

We have, for instance, addressed the possibility of a mono-method bias as a validity-threat in our study. To eliminate this bias, the study should be replicated using other types of mood induction procedures. Instead of using films, refreshments could be served, gifts could be handed out etc. The overview of various mood induction procedures outlined in chapter 4 and appendix 2 should provide useful guidelines in this respect.

For some of the analyses, low statistical power was identified as a problem. For further research the number of subjects in each cell should consequently be increased. Replications of the present study should thus concentrate on only a few experimental conditions at a time, and rather give priority to a higher number of subjects in each cell.

In experiment 1, we established that the underlying relationship between mood states and mood effects on evaluations, is a non-linear one. For non-linear relationships, Cook and Campbell (1979) suggest the use of parametric research, in which many intensity-levels of mood induction are varied, and many levels of mood effects are measured. In experiment 1, we covered four levels of mood-intensity (one for each film). As we recall from an earlier discussion these four levels enabled us to speculate on how the underlying relationship between mood states and mood effects really is. It is, however, important to remember that with only four sets of observations, these thoughts will hardly be more than speculations. In order to estimate the true relationship, future studies should employ a large number mood inductions of different intensities, measure their mood inducing properties using the same mood measure, and assess their effects on evaluations.

As discussed earlier, the main limitations of our study are in relation to external validity. To increase external validity, parts of the study should be replicated in field-settings using random samples of the general population. These replications should focus on real-life product evaluations in a natural context. As far as mood induction is concerned, the studies can either be designed as quasi experiments, where mood is induced by factors beyond the researcher's control, or as observational studies, using

naturally occuring mood. In any case, the overview of different mood induction procedures discussed in chapter 4 and appendix 1 should provide the necessary guidelines.

As mentioned previously the present research can be seen both in the context of consumer behavior as well as survey methodology. We will therefore conclude this chapter with some suggestions for further research in these two disciplines.

For consumer behavior, the main issue in our opinion will be to study the informative function of mood states. In this dissertation we have found an interaction-effect between mood and informational content. Further studies should be carried out to gain more insight into this interaction-effect. The goal should be to find the optimal combination of information content and mood induction, i.e. the type of market communication messages that have the maximum effect on evaluations.

In our study, informational content has only been given in a positive mood inducing form. For market communication purposes, a combination of informational content and negative mood induction may be just as relevant. In campaigns against e.g. drug abuse and smoking, such a combination may prove to be effective. Future studies should thus vary the informational content of negative mood inducing messages, and measure the effect on evaluations and attitudes.

This study has focused exclusively on evaluations. However, the two other key variables recall and behavior, should also receive more attention from the academic community. Important questions in this respects may be how mood induction can be used to improve product recognition and recall, and how induced mood will influence actual buying behavior.

For survey methodology, the main questions will be to determine in what cases, respondents' mood states will constitute a threat to validity. In previous studies (see Sudman, 1987) temporary mood has been found to have a great impact on responses to for example general questions about life satisfaction. However, in experiment 1 of our study, the mood effects were not of such a magnitude that they represented a major threat to validity. The task of future studies should thus be to identify for which type of surveys mood will represent a threat. This can be done using an experimental setting, like in our study, or simply by including a mood measure in actual surveys.

These other two key variables, recall and behavior, should also be relevant for survey methodology. Mood effects on recall will have importance for responses to behavioral questions, as they can lead to under- or over-reporting of certain behaviors. For behavior, studies should focus on both response-rate and response-quality. As we discussed previously there will always be the possibility that people in a certain mood will be overrepresented in surveys. When it comes to response-quality, studies should be carried out to determine if the rate of questions left unanswered by the respondent (missing data) is related to the respondent's temporary mood state.

To summarize this discussion we have proposed that replications of this study should employ different mood induction procedures to rule out the threat of a mono-method bias. Furthermore, a higher number of subjects should be used in each cell to increase the statistical power. We have identified the relationship between mood states and mood effects as a non-linear one and thus suggested the use of parametric research, in which many intensity-levels of mood induction are varied, and their effect on evaluations assessed. The main limitation of our study is in relation to external validity. To overcome this limitation, we have proposed that future replications should be conducted in field-settings, either as quasi experiments or as observational studies.

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# Appendix 1

# A comprehensive overview of mood induction procedures

In chapter 4, it was stated that the various mood induction procedures, can be divided into the following groups:

1. True experimental procedures
2. Quasi experiments with experimenter-induced treatment
3. Quasi experiments with unobtrusive measures
4. Quasi experiments with self-report measures
5. Observational studies

The true experimental procedures were classified using an active/passive distinction. We recall that in the passive-procedures, mood is induced without the subjects taking an active part in the induction. In other words, induction is performed using some other form of accessory. In the mood induction procedures where the subjects are active, mood induction is a result of some form of activity within the subject, that leads directly to the induction of the desired mood state.

In this appendix, a comprehensive overview of mood induction procedures will be given, starting with the following true experimental procedures:

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**Subjects active**

The quasi experimental mood induction procedures are presented on pp. 219-221 as follows:

In a fairly large number of studies mood induction has been omitted altogether, and the focus has instead been on the natural variation of subjects' mood states. These studies have been termed observational studies of mood, and on pp. 222-224 an overview of observational studies is given. The list is limited to studies from the last ten years.

# Mood induction procedure disguised as a test

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Berkowitz and Connor (1966) | Success/failure on problem-solving task | + Success<br>0 No experience<br>- Failure | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |
| Mischel et. al. (1968) | Above/below norm score on a bowling game | + Score above norm<br>- Score below norm | Setting:<br>Subjects:<br>Manipul.<br>check: | Mobile trailer<br>Children<br><br>No |
| Isen (1970) | Above/below norm scores on bogus perceptual-motor skills test | + Above the norm<br>- Below the norm | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>School teachers<br><br>No |
| Isen et.al. (1973) | Above/below norm score on a bowling game | + Score above norm<br>0 Received no score<br>0 No play (control)<br>- Score below norm | Setting:<br>Subjects:<br>Manipul.<br>check: | Mobile trailer<br>Children<br><br>No |
| Seeman and Schwarz (1974) | Success/failure experience | + Success<br>- Failure | Setting:<br>Subjects:<br>Manipul.<br>check: | ?<br>Children<br><br>? |
| Isen et. al. (1978) | Victory/defeat on computer game | + Subject won<br>- Computer won | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>No |
| Weyant (1978) | Success/failure on anagram test | + Easy anagram (success)<br>0 Placebo test (no feedback)<br>- Difficult anagram (failure) | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>No |
| Isen and Shalker (1982) | Success/failure on bogus test | + Success<br>- Failure | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>No |
| Clark and Waddell (1983) | Feedback on bogus-test | + Positive<br>0 No feedback<br>- Negative | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |

# Audiovisual stimuli

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Donnerstein et. al. (1975) | Slides | + Viewing slides showing flower, animals and sunsets<br>0 Writing pro/con arguments<br>- Slides showing old people and migrant workers (intended to induce a feeling of guilt) | Setting:<br>Subjects:<br>Manipul.<br>check: | ?<br>?<br><br>? |
| Fried and Berkowitz (1979) | Music | + Peaceful music<br>+ Music associated with joyful feelings<br>0 No music heard<br>- Music associated with annoyance, boredom and irritation | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |
| Kroeber-Riel (1984) | Slide advertisements (up to thirty repetitions to condition an emotional reaction) | + Pictures containing emotional events concerned with eroticism, social happiness and exotic landscapes<br>0 No treatment (pre-test) | Setting:<br><br>Subjects:<br>Manipul.<br>check: | Simulated film theater<br>?<br><br>Yes |
| Isen et. al. (1985) | Videotaped films | + TV-bloopers<br>0 Instructional film | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |
| Isen and Gorgoglione (1983) | 5 minute segments of film | + Comedy film<br>0 No film<br>- Anxiety-producing film | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |
| Davis et. al. (1987) | Videotaped films | - Sadness and sympathy<br>- Anger and hostility | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |

# Audiovisual stimuli (continued)

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Isen et. al. (1987) | 5 minute segments of film | + Comedy film<br>0 Instructional film<br>- Documentary film from Nazi concentration camps | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |
| Larsen et. al. (1987) | Photographic slides | + Positive slides (pleasant scenes)<br>0 Neutral slides<br>- Negative slides | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>No |
| Forgas et. al. (1988) | Videotaped films | + Happy film episode<br>- Sad film episode | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>Children<br><br>Yes |

# Gifts etc.

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Isen and Shalker (1982) | Finding dime | + Finding dime in chair<br>- No manipulation | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>No |
| Isen et. al. (1982) | Refreshments | + Subjects received juice and cookies<br>0 No manipulation | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>No |
| Isen et. al. (1982) | Refreshments/gifts | + Subjects received juice and cookies<br>+ Subjects received a gift of $1<br>0 No manipulation | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>No |
| Isen et. al. (1982) | Gift certificates | + Subjects received McDonald's gift certificates | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>No |

# Physical stimuli

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|-------|-------------------------|------------------------|------------------------|---|
| Griffitt (1970) | Effective temperature | 0 Normal temperature<br>- Hot and humid | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |

# Actual experiences

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|-------|-------------------------|------------------------|------------------------|---|
| Regan et. al. (1972) | Camera would not work | + Experimenter implies that malfunction is not subjects fault<br>- Experimenter implies the subject broke the camera | Setting:<br>Subjects:<br><br>Manipul.<br>check: | Shopping mall<br>Women roughly 25 and up<br><br>No |
| Barden et. al. (1985) | Subject rejected by another child | + The other child stated that he or she would gladly play with the subject<br>- The subject was rejected | Setting:<br>Subjects:<br><br>Manipul.<br>check: | Laboratory<br>Second grade children<br><br>Yes |

# Attractiveness

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|-------|-------------------------|------------------------|------------------------|---|
| Clark et. al. (1987) | Attractiveness of other person | + The attractive person indicated that he/she was single and interested in meeting people<br>- The attractive person indicated that he/she was married | Setting:<br>Subjects:<br><br>Manipul.<br>check: | Laboratory<br>College students (all single)<br><br>Yes |

# Stories

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Veitch and Griffitt (1976) | Phony news broadcast | + Heard broadcast conveying good news <br> - Heard bad news | Setting: <br> Subjects: <br><br> Manipul. check: | Waiting room <br> College students <br><br><br> Yes |
| Bartlett and Santrock (1979) | Storytelling | + Subjects heard happy story <br> - Subjects heard sad story | Setting: <br> Subjects: <br><br> Manipul. check: | Laboratory <br> Pre-school children <br><br> Yes |
| Johnson and Tversky (1983) | Newspaper reports | + Subjects read a story designed to produce positive affect <br> 0 Neutral filler story <br> - Subject read an account of a tragic event | Setting: <br> Subjects: <br> Manipul. check: | Laboratory <br> College students <br><br> Yes |
| Barden et. al. (1985) | Storytelling | + Subjects heard a happy story <br> - Subjects heard a sad story | Setting: <br> Subjects: <br><br> Manipul. check: | Laboratory <br> Second grade children <br><br> Yes |
| Diener and Iran-Nejad (1986) | Stories | + Story had a happy ending <br> - Story had a terrible ending <br> (all subjects read both stories, but level of surprise was manipulated) | Setting: <br> Subjects: <br> Manipul. check: | Laboratory <br> College students <br> Yes |

# Combination techniques

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Manucia et. al. (1984) | Placebo drug and recall of earlier life events | 3x2 design<br>+ Happy life event<br>0 Neutral life event<br>- Sad life event<br><br>Placebo drug said to have no effect on mood or said to prolong mood state. | Setting:<br>Subjects:<br>Manipul. check: | Laboratory<br>College students<br>Yes |
| Schwarz et. al. (1985) | Placebo pill and fear arousing anti-smoking film | + The pill was said to have a tranquilizing effect<br>0 Only an itching of the hands was described as side-effect<br>- The pill was said to increase nervousness, unrest, and feelings of tension | Setting:<br>Subjects:<br><br>Manipul. check: | Laboratory<br>College students (all smokers)<br><br>Yes |
| Baron et. al. (1985) | Negative ions and provocation | 0 Subject was not provoked<br>- Subject was strongly provoked<br><br>Both conditions were performed with low, medium or high concentrations of negative ions in the room. | Setting:<br>Subjects:<br>Manipul. check: | Laboratory<br>College students<br><br>Yes |

# Manipulate subjects' facial expressions

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions |
|---|---|---|---|
| Laird (1974) | Subjects were instructed to smile or frown without awareness of the nature of their expressions | + Subjects smiled<br>- Subjects frowned | Setting: Laboratory<br>Subjects: College students<br>Manipul.<br>check: Yes |
| Laird et. al. (1982) | Same as above | | |

# Description/recall of earlier life events

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions |
|---|---|---|---|
| Underwood et. al. (1980) | Generate images of events in the recent past | + Subjects asked to recall two events that had made them particularly happy<br>0 Recall two events which had been neither particularly sad nor particularly happy<br>- Recall two sad events | Setting: Laboratory<br>Subjects: College students<br>Manipul.<br>check: Yes |
| Srull (1983 a & b, 1984) | Recall of earlier life events | + Recall of positive events<br>0 Recall of neutral events<br>- Recall of negative events<br>(intensity of manipulation was varied by the length of time and amount of detail involved in the recollection) | Setting: Laboratory<br>Subjects: College students<br>Manipul.<br>check: No |
| Schwarz and Clore (1983) | Descriptions of earlier life events | + Subjects asked to describe a happy event<br>0 No manipulation<br>- Subjects asked to describe a sad event | Setting: Laboratory<br>Subjects: College students<br>Manipul.<br>check: Yes |

# Velten procedure

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Aderman (1972) | Subjects read Velten statements | + Subjects read positive statements designed to induce elation<br>- Subjects read negative statements designed to induce depression | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>One half of the subjects completed Nowlis' (1965) Mood Adjective Check List.<br>No significant main effect for manipul. check found. |
| Teasdale and Fogarty (1979) | Velten statements | + Positive statements<br>- Negative statements | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |
| Carson and Adams (1980) | Velten statements | + Positive statements<br>0 Neutral statements<br>- Negative statements | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |
| Isen and Gorgoglione (1983) | Velten statements | + Positive statements<br>0 No manipulation<br>- Negative statements | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |
| Kirschenbaum et. al. (1985) | Velten statements | + Positive self-evaluation statements<br>+ Positive somatic statements<br>0 Neutral statements<br>- Negative self-evaluation statements<br>- Negative somatic statements | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |
| Berkowitz (1987) | Velten statements | + Positive statements<br>0 Neutral statements<br>- Negative statements | Setting:<br>Subjects:<br><br>Manipul.<br>check: | Laboratory<br>College students (all female)<br><br>Yes |

# Self-generated thoughts

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Moore et. al. (1973) | Self-generated thoughts | + Happy thoughts<br>0 Subjects asked to sit quiet for 30 seconds<br>0 Subjects asked to count slowly for 30 seconds<br>- Sad thoughts | Setting:<br>Subjects:<br>Manipul.<br>check: | Mobile trailer<br>Children<br><br>No |
| Underwood et. al. (1973) | Self-generated thoughts | + Happy thoughts<br>0 Subjects asked to count slowly for 30 seconds<br>- Sad thoughts | Setting:<br>Subjects:<br>Manipul.<br>check: | Mobile trailer<br>Children<br><br>No |
| Fry (1975) | Self-generated thoughts | + Happy thoughts<br>0 Subjects asked to read instructions to a jigsaw puzzle<br>- Sad thoughts | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>Children<br><br>No |
| Moore et. al. (1976) | Self-generated thoughts | + Happy thoughts<br>0 Subjects asked to count slowly to ten<br>- Sad thoughts | Setting:<br>Subjects:<br><br>Manipul.<br>check: | Laboratory<br>Pre-school children<br><br>No |

# Word associations

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Isen et. al. (1985) | Word-association to affectively valenced words | + Positive words<br>0 Neutral words<br>- Negative words | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |

## Hypothetical situations

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions |
|---|---|---|---|
| Meyer and Mulherin (1980) | Subjects asked to imagine a specific situation and indicate the extent to which they believed they would experience various emotional reactions | For different situations subjects reacted with:<br>+ Empathy<br>- Anger<br>- Concern | Setting: Laboratory<br>Subjects: College students<br>Manipul. check: Yes |

# Quasi experiments with experimenter-induced treatment

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Isen and Levin (1972) (study 1) | Gave subjects free cookies in library | + Received cookies<br>0 No manipulation | Setting:<br>Subjects:<br><br><br>Manipul.<br>check: | University library<br>College students (all males)<br><br>No |
| Isen and Levin (1972) (study 2) | Subjects found dime in phone booth | + Found dime<br>0 No manipulation | Setting:<br><br>Subjects:<br><br>Manipul.<br>check: | Public phone-booth<br>Male and female adults<br><br>No |
| Blevins and Murphy (1974) | Same as above | | | |
| Isen and Simmonds (1978) | Same as above | | | |
| Isen et. al. (1978) | Free gift in shopping mall | + Women received notepads<br>+ Men received nail clippers<br>0 No manipulation | Setting:<br>Subjects:<br><br><br>Manipul.<br>check: | Shopping mall<br>Men and women who were walking alone<br><br>No |
| Batson et. al. (1979) | Same "dime in phone booth"-procedure as described above | | | |
| Bower et. al. (1978) | Post-hypnotic suggestion | + Happy mood<br>- Sad mood | Setting:<br>Subjects:<br><br><br><br>Manipul.<br>check: | Laboratory<br>College students (all highly hypnotizable)<br><br>Yes |
| Bower et. al. (1981) | Same as above | | | |
| Natale and Hantas (1982) | Hypnosis combined with Velten procedure | + Elation<br>- Depression | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>College students<br><br>Yes |

# Quasi experiments with unobtrusive measures

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Cunningham (1979) | No induction, but sunshine, temperature, humidity, wind velocity and lunar-phased assessed | + Positive correlation between sunshine and mood, and temperature and mood<br>0 No significant relationship found between wind velocity and mood or lunar-phase and mood. | Setting:<br>Subjects:<br>Manipul.<br>check: | Natural setting<br>Ordinary people<br><br>Yes |
| Metalsky et. al. (1982) | Mid-term grades | + High mid-term grade<br>- Low mid-term grade | Setting:<br>Subjects:<br>Manipul.<br>check: | Laboratory<br>Students<br><br>Yes |
| Schwarz and Clore (1983) | Interviewing people on sunny or rainy days | + Sunny days<br>- Rainy days | Setting:<br><br>Subjects:<br>Manipul.<br>check: | Telephone-interview<br>College students<br><br>Yes |
| Troye and Somrau (1988) | Weather on vacation | + Good weather<br>0 Medium weather<br>- Bad weather | Setting:<br>Subjects:<br>Manipul.<br>check: | Hotels<br>Tourists<br><br>No |

# Quasi experiments with self-report measures

| Study | Mood induction procedure | Valence of induced mood | Experimental conditions | |
|---|---|---|---|---|
| Eckenrode (1984) | Chronic and acute stressors | - Concurrent daily stressors and physical symptoms were found to have a negative impact on mood | Setting: Subjects: Manipul. check: | Natural setting Women with children Yes |
| Goodhart (1985) | Stressful events and positive/negative thinking | + Positive thinking may temporarily reduce the negative impact of stressful events - Negative thinking may increase the negative impact of stressful events | Setting: Subjects: Manipul. check: | Laboratory College students Yes |
| Carver and Gaines (1987) | Postpartum depression | Measured postpartum depression and found a negative correlation between dispositional optimism and post-partum depression | Setting: Subjects: Manipul. check: | Completed questionnaires at home Women who had just given birth Yes |
| Troye and Somrau (1988) | Asked hotel guests to rate service quality at the hotel | Assumed a positive correlation between reported service quality and mood | Setting: Subjects: Manipul. check: | Hotels Tourists No |

# Observational studies

| Study | Focus | Study-conditions | |
|---|---|---|---|
| Costa and McCrae (1980) | The relationship between naturally occurring mood and personality variables | Setting: | Natural |
| | | Subjects: | Mainly white veterans |
| | | Measurement: | Series of four questionnaires at intervals of three months |
| Lefcourt et. al. (1981) | Locus of control as a modifier of the relationship between stressors and mood | Setting: | Natural |
| | | Subjects: | College students |
| | | Measurement: | Daily mood measures for four weeks |
| Stone (1981) | The association between perceptions of daily experiences and self- and spouse-rated mood | Setting: | Natural |
| | | Subjects: | Married couples |
| | | Measurement: | Both spouses completed daily measures of husband's mood for two weeks |
| O'Malley and Gillette (1984) | The relationship between personality traits and emotions | Setting: | Laboratory |
| | | Subjects: | College students |
| | | Measurement: | Single self-report measurement |
| Stone and Neale (1984) | Effects of severe daily events on mood | Setting: | Natural |
| | | Subjects: | Married couples |
| | | Measurement: | Daily recordings of mood and emotionally laden/important events for a period of at least 40 days |
| Emmons and Diener (1985) | Personality correlates of subjective well-being | Setting: | Natural/laboratory |
| | | Subjects: | College students |
| | | Measurement: | Single measurements of personality variables in lab. setting. Daily mood diaries for more than 50 consecutive days. |

# Observational studies (continued)

| Study | Focus | Study-conditions | |
|---|---|---|---|
| Diener et. al. (1985) | Intensity and frequency: Dimensions underlying positive and negative affect | Setting: Subjects: Measure- ment: | Natural College students Daily self-report mood measures for 10 weeks. |
| Larsen et. al. (1986) | Affect intensity and reactions to daily life events | Setting: Subjects: Measure- ment: | Natural College students Subjects recorded two events per day for 56 consecutive days and rated their affective reactions to those events |
| Diener and Iran-Nejad (1986) Study 2 | The relationship in experience between various types of affect | Setting: Subjects: Measure- ment: | Natural College students Subjects completed a mood form each time they felt "emotional", but no more than one report per day to ensure that a new emotional reaction was being captured by each report. |
| Emmons and Diener (1986) | Influence of impulsivity and sociability on subjective well-being | Setting: Subjects: Measure- ment: | Natural/laboratory College students Single measurements of personality variables in lab. setting. Daily mood diaries for 6 or 8 weeks. |
| Emmons et. al. (1986) | Choice and avoidance of everyday situations and affect congruence | Setting: Subjects: Measure- ment: | Natural/laboratory College students Each subject generated a list of 20 representative situations from his/her current life. Single measurements of personality variables, and daily mood forms for 30 consecutive days |

# Observational studies (continued)

| Study | Focus | Study-conditions | |
|---|---|---|---|
| Larsen (1987) | The stability of mood variability | Setting: | Natural |
| | | Subjects: | College students |
| | | Measure-ment: | Daily mood forms for 56 consecutive days |
| Clark and Watson (1988) | Relations between daily life events and self-reported mood | Setting: | Natural |
| | | Subjects: | College students |
| | | Measure-ment: | Daily reports of mood and events for 90 consecutive days |
| Folkman and Lazarus (1988) | Coping as a mediator of emotion | Setting: | Interviews in subjects' homes |
| | | Subjects: | Married couples (sample 1) Older people (sample 2) |
| | | Measure-ment: | Single measurement of coping. Monthly interviews for 6 months concerning stressful events and associated emotional responses. |
| Watson (1988) | Intraindividual and interindividual analyses of positive and negative affect | Setting: | Natural |
| | | Subjects: | College students |
| | | Measure-ment: | Daily measures of mood, physical complaints, stress, social activities, exercise and important events for 7 weeks |

# Appendix 2
# Questionnaires used in the experiments

## Experiment 1

The questionnaire used in experiment 1 is presented on pp. 226-240. It consists of the following parts:

### Section 1

| | |
|---|---|
| p. 226 | Questions about gender and ethnic background |
| pp. 226-227 | Nowlis' (1965) Mood Adjective Check List |

### Section 2

| | |
|---|---|
| pp. 228-230 | Evaluation of Norway |
| p. 231 | Questions to determine if the subject has ever been to Norway, and if so, questions about the visit. |
| pp. 232-233 | Evaluation of another travel destination. As mentioned previously 25% of the subjects were asked to evaluate Sweden, 25% Germany, 25% France, and the remaining 25% Europe in general. |
| p. 233 | Question to determine if the subject has ever visited the other destination, and if so, number of times and when. |

### Section 3

| | |
|---|---|
| p. 234 | Scheier and Carver's (1985) "Life Orientation Test". |
| p. 235 | Leary et. al.'s (1986) "Objectivism Scale", and |
| pp. 236-237 | Larsen's (1984) "The Affect Intensity Measure Simplified" |

As mentioned earlier, the personality measurement scales in section 3 and the questions about the other destination in section 2, were included for purposes other than this dissertation.

### Section 4

| | |
|---|---|
| pp. 238-239 | A series of questions designed to estimate the subject's knowledge about Norway. The subject's answers to these questions were used to compute a knowledge score. The computational procedure has been discussed in chapter 6. |

### Section 5

| | |
|---|---|
| p. 240 | Isen et. al.'s (1987) manipulation check. |

## Section 1

Sex:     ☐ Male

(Please check the appropriate box)

☐ Female

Where did your ancestors come from?

Name the country (countries):

_____

_____

_____

Each of the following words describes feelings or mood.   Please use the list to describe your feelings at the moment you read each word. If the word definitely describes how you feel at the moment you read it, circle the double check (vv) to the right of the word.   For example, if the word is relaxed and you are definitely feeling relaxed at the moment, circle the vv as follows:

Relaxed     (vv)     v     ?     no     (This means you definitely feel relaxed at the moment.)

If the word only slightly applies to your feelings at the moment, circle the single check (v) as follows:

Relaxed     v v     (v)     ?     no     (This means you feel slightly relaxed at the moment.)

If the word is not clear to you or you cannot decide whether or not it applies to your feelings at the moment, circle the question mark as follows:

Relaxed    v v   v   (?)    no    (This means you cannot decide whether you are relaxed or not.)

If you definitely decide the word does not apply to your feelings at the moment, circle the no as follows:

Relaxed    v v   v   ?    (no)    (This means you are definitely not relaxed at the moment.)

Work rapidly. Your first reaction is best. Work down the first column, then go to the next. Please mark all words. This should take only a few minutes. Please begin.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Angry | v v | v | ? | no | Kindly | v v | v | ? | no |
| Clutched up | v v | v | ? | no | Sad | v v | v | ? | no |
| Carefree | v v | v | ? | no | Skeptical | v v | v | ? | no |
| Elated | v v | v | ? | no | Egoistic | v v | v | ? | no |
| Concentrating | v v | v | ? | no | Energetic | v v | v | ? | no |
| Drowsy | v v | v | ? | no | Nonchalant | v v | v | ? | no |
| Affectionate | v v | v | ? | no | Rebellious | v v | v | ? | no |
| Regretful | v v | v | ? | no | Jittery | v v | v | ? | no |
| Dubious | v v | v | ? | no | Witty | v v | v | ? | no |
| Boastful | v v | v | ? | no | Pleased | v v | v | ? | no |
| Active | v v | v | ? | no | Intent | v v | v | ? | no |
| Leisurely | v v | v | ? | no | Tired | v v | v | ? | no |
| Defiant | v v | v | ? | no | Warm- | | | | |
| Fearful | v v | v | ? | no | hearted | v v | v | ? | no |
| Playful | v v | v | ? | no | Sorry | v v | v | ? | no |
| Overjoyed | v v | v | ? | no | Suspicious | v v | v | ? | no |
| Engaged in | | | | | Self- | | | | |
| thought | v v | v | ? | no | centered | v v | v | ? | no |
| Sluggish | v v | v | ? | no | Vigorous | v v | v | ? | no |

## Section 2

We would now like your opinion about Norway, both in general and as a travel destination. Please, consider the following aspects with regards to Norway, and circle the appropriate number. It is essential that you rate all items, even if your knowledge about Norway is somewhat limited.

|  | very poor | | | | | | very good |
|---|---|---|---|---|---|---|---|
| 1. The possibility to see and experience nature in Norway is..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 2. The health-care system in Norway is..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 3. The educational system in Norway is..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 4. The swimming possibilities in Norway are..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 5. The possibilities for hiking in Norway are..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 6. The possibilities for nightlife and entertainment in Norway are..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 7. The possibilities for a calm and peaceful stay in Norway are..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

|                                                                                      | very<br>poor |      |      |      |      |      | very<br>good |
|--------------------------------------------------------------------------------------|------|------|------|------|------|------|------|
| 8. Democracy and civil-rights<br>in Norway are.....                                  | -3   | -2   | -1   | 0    | 1    | 2    | 3    |
| 9. The suicide-rate<br>in Norway is.....                                             | -3   | -2   | -1   | 0    | 1    | 2    | 3    |
| 10. The weather in Norway is.....                                                    | -3   | -2   | -1   | 0    | 1    | 2    | 3    |
| 11. The standard of living<br>in Norway is.....                                      | -3   | -2   | -1   | 0    | 1    | 2    | 3    |
| 12. The possibilities to experience<br>something new during a vacation<br>in Norway are..... | -3   | -2   | -1   | 0    | 1    | 2    | 3    |
| 13. The possibilities to eat well<br>during a vacation in Norway are.. | -3   | -2   | -1   | 0    | 1    | 2    | 3    |
| 14. The unemployment-rate<br>in Norway is.....                                       | -3   | -2   | -1   | 0    | 1    | 2    | 3    |
| 15. The possibilities to have a<br>reasonably priced vacation<br>in Norway are..... | -3   | -2   | -1   | 0    | 1    | 2    | 3    |
| 16. The possibilities to become<br>physically fit during a<br>vacation in Norway are..... | -3   | -2   | -1   | 0    | 1    | 2    | 3    |
| 17. Communications and<br>transportations<br>in Norway are..... | -3   | -2   | -1   | 0    | 1    | 2    | 3    |

| | very poor | | | | | very good |
|---|---|---|---|---|---|---|
| 18. The shopping possibilities in Norway are..... | -3 -2 -1 0 1 2 3 |
| 19. The safety as a tourist in Norway is..... | -3 -2 -1 0 1 2 3 |
| 20. The possibility to experience clean and undisturbed nature in Norway is..... | -3 -2 -1 0 1 2 3 |
| 21. The possibilities for cultural experiences during a vacation in Norway are..... | -3 -2 -1 0 1 2 3 |
| 22. Service and helpfulness in Norway is..... | -3 -2 -1 0 1 2 3 |
| 23. Overall, I would rate Norway as a travel destination as..... | -3 -2 -1 0 1 2 3 |
| 24. In comparison with other Scandinavian countries, Norway as a travel destination is..... | -3 -2 -1 0 1 2 3 |
| 25. In comparison with other European countries, Norway as a travel destination is..... | -3 -2 -1 0 1 2 3 |
| 26. In comparison with travel-destinations in general, Norway as a travel destination is..... | -3 -2 -1 0 1 2 3 |

Have you ever been to Norway?

&#9633; Yes

&#9633; No

If yes, answer the following questions:

Number of times:                    What year(s):

_____                    _____

In what time of the year, did you visit Norway?

&#9633; Spring

&#9633; Summer

&#9633; Fall

&#9633; Winter

What areas/cities in Norway did you visit?

------------------------------------------------------------------------

------------------------------------------------------------------------

------------------------------------------------------------------------

What was the purpose of your visit to Norway?

&#9633; Business

&#9633; Pleasure

&#9633; Both

Now, we would like you to think of <u>Europe</u> in general, and evaluate the following aspects of Europe. Thus, when you answer these questions, do not focus on any particular country, but think of Europe in general.

|  | very poor |  |  |  |  |  | very good |
|---|---|---|---|---|---|---|---|
| 1. The possibility to see and experience nature in Europe is in general..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 2. The possibilities for hiking in Europe are in general..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 3. The possibilities for nightlife and entertainment in Europe are in general..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 4. Democracy and civil-rights in Europe are in general..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 5. The standard of living in Europe is in general..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 6. The possibilities to eat well during a vacation in Europe are in general..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 7. The unemployment-rate in Europe is in general..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 8. The possibilities to have a reasonably priced vacation in Europe are in general..... | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

|  | very<br>poor |  |  |  |  |  | very<br>good |
|---|---|---|---|---|---|---|---|

9. The shopping possibilities in
   Europe are in general.....    -3   -2   -1   0   1   2   3

10. The safety as a tourist in
    Europe is in general.....    -3   -2   -1   0   1   2   3

11. The possibilities for cultural
    experiences during a vacation
    in Europe are in general.....    -3   -2   -1   0   1   2   3

12. Service and helpfulness
    in Europe is in general.....    -3   -2   -1   0   1   2   3

13. Overall, I would rate Europe
    as a travel destination as.....    -3   -2   -1   0   1   2   3

14. I would describe my knowledge
    about Europe as.....    -3   -2   -1   0   1   2   3

Have you ever been to Europe?

    ☐ Yes

    ☐ No

If yes, number of times:      What year(s):

     _____         _____

If yes, what countries did you visit?    _____

                                _____

## Section 3

For the next 12 items, please indicate the extent to which you agree by placing a number from the following scale in the blank space preceding each item. Be as accurate and honest as you can throughout, and try not to let your answer to one question influence your answers to other questions. Remember, there are no correct or incorrect answers.

| STRONGLY DISAGREE | DISAGREE | NEUTRAL | AGREE | STRONGLY AGREE |
|:---:|:---:|:---:|:---:|:---:|
| 0 | 1 | 2 | 3 | 4 |

1. ＿＿＿ In uncertain times, I usually expect the best.

2. ＿＿＿ It's easy for me to relax

3. ＿＿＿ If something can go wrong for me, it will.

4. ＿＿＿ I always look at the bright side of things.

5. ＿＿＿ I'm always optimistic about my future.

6. ＿＿＿ I enjoy my friends a lot.

7. ＿＿＿ It's important for me to keep busy.

8. ＿＿＿ I hardly ever expect things to go my way.

9. ＿＿＿ Things never work out the way I want them to.

10. ＿＿＿ I don't get upset too easily.

11. ＿＿＿ I'm a believer in the idea that "every cloud has a silver lining".

12. ＿＿＿ I rarely count on good things happening to me.

The next set of questions refers to your use of different types of information. Please indicate on the following response scale to what extent the different items apply to you. Once again: Remember, there are no correct or incorrect answers.

## HOW CHARACTERISTIC OF ME:

| NOT AT ALL | SLIGHTLY | MODERATELY | VERY | EXTREMELY |
|------------|----------|------------|------|-----------|
| 0 | 1 | 2 | 3 | 4 |

1. _____ I seek as much information as possible before making decisions.

2. _____ I think the answers to most questions in life can be found through careful, objective analysis of the situation.

3. _____ I do not like to be too objective in the way I look at things.

4. _____ Trying to be highly objective and rational does not improve my ability to make good decisions.

5. _____ I see myself as a rational and objective person.

6. _____ After I make a decision, it is often difficult for me to give logical reasons for it.

7. _____ I gather as much information as possible before making decisions.

8. _____ The solution to many problems in life can not be found through an intellectual examination of the facts.

9. _____ I try to employ a cool-headed, objective approach when making decisions about my life.

10. _____ I am only confident of decisions that are made after careful analysis of all available information.

11. _____ I tend not to be particularly objective or logical in my approach to life.

The following questions refer to emotional reactions to typical life events. Please indicate how YOU react to these events by placing a number from the following scale in the blank preceding each item. Please base your answers on how YOU react, not on how you think others react or how you think a person should react.

| NEVER | ALMOST NEVER | OCCASIONALLY | USUALLY | ALMOST ALWAYS | ALWAYS |
|-------|--------------|--------------|---------|---------------|--------|
| 1 | 2 | 3 | 4 | 5 | 6 |

1. ____ When I feel happiness, it is a quiet type of contentment.

2. ____ When a person in a wheelchair can't get through a door I have strong feelings of pity.

3. ____ I get upset easily.

4. ____ When I succeed at something, my reaction is calm contentment.

5. ____ I get really happy or really unhappy.

6. ____ I'm a fairly quiet person.

7. ____ When I'm happy I feel energetic.

8. ____ Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.

9. ____ When I'm happy I feel like bursting with joy.

10. ____ I would be very upset if I got a traffic ticket.

11. ____ Looking at beautiful scenery really doesn't affect me much.

12. ____ The weather doesn't affect my mood.

13. ____ Others tend to get more excited about things than I do.

| NEVER | ALMOST NEVER | OCCASIONALLY | USUALLY | ALMOST ALWAYS | ALWAYS |
|-------|--------------|--------------|---------|---------------|--------|
| 1 | 2 | 3 | 4 | 5 | 6 |

14. _____ I am not an extremely enthusiastic individual.

15. _____ "Calm and cool" could easily describe me.

16. _____ When I'm feeling well it's easy for me to go from being in a good mood to being really joyful.

17. _____ When I worry, it is so mild that I hardly notice it.

18. _____ I get overly enthusiastic.

19. _____ My happy moods are so strong that I feel like I'm "in heaven".

20. _____ When something bad happens, others tend to be more unhappy than I.

## Section 4

Now we return to questions about Norway. If you do not know the
correct answers to these questions, try your best guess. It is
essential that you answer all questions.

1. What is the population of Norway? _____ million

2. Name 3 Norwegian cities:    _____

   _____

   _____

3. Norway shares borders
   with the following countries:    _____

   _____

   _____

4. The capital of Norway is:

   _____

5. Name the three most important industries in Norway, i.e. the
   industries with highest annual sales:

   _____

   _____

   _____

6. Which of the following persons are/were Norwegians?
(Check the appropriate boxes)

☐ Thor Heyerdahl            ☐ Helmut Kohl

☐ King Carl Gustav          ☐ Olof Palme

☐ Julius Stenbakk           ☐ Henrik Ibsen

☐ Edward Munch              ☐ Roald Amundsen

☐ August Strindberg         ☐ Leif Ericson

## Section 5

The following questions refer to the film you watched earlier in this experiment. Please circle the number that best corresponds to your impression of the film:

|  | very tired |  |  |  |  | very re-freshed |
|---|---|---|---|---|---|---|

1. The film made me feel.....    1  2  3  4  5  6  7

|  | very negative mood |  |  |  |  | very positive mood |
|---|---|---|---|---|---|---|

2. The film put me in a.....    1  2  3  4  5  6  7

|  | very anxious |  |  |  |  | very calm |
|---|---|---|---|---|---|---|

3. The film made me feel.....    1  2  3  4  5  6  7

|  | very unaware |  |  |  |  | very alert |
|---|---|---|---|---|---|---|

4. The film made me feel.....    1  2  3  4  5  6  7

|  | very sober |  |  |  |  | very amused |
|---|---|---|---|---|---|---|

5. The film made me feel.....    1  2  3  4  5  6  7

## Experiment 2

The questionnaire used for groups 1 and 2 was the same as for experiment 1, except that section 5, Isen et. al.'s (1987) manipulation check, was left out for these two groups. As mentioned previously, the subjects in group 1 also completed the Mood Adjective Check List as a pre-treatment measure.

The subjects in group 3 were not asked to evaluate the different aspects of Norway, but rather asked to rate how well different aspects of Norway were covered in the film. The part of the questionnaire used for this task is presented on pages 242-244. Furthermore, the subjects in group 3 were not asked to evaluate any other travel destination. Isen et. al.'s (1987) manipulation check was included to measure the effect of the Norway-film.

## Section 2

The following questions refer to the film about Norway, you watched earlier in this experiment. First, we would like you to rate how well different aspects of Norway are covered in the film. By coverage we mean that the film enables the viewer to form an impression of the aspect, either through statements from the commentator or through visual stimuli. Please circle the number that best corresponds to your impression of the film:

|  | not covered at all |  |  |  | fully covered |
|---|---|---|---|---|---|
| 1. The possibility to see and experience nature in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 2. The health-care system in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 3. The educational system in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 4. The swimming possibilities in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 5. The possibilities for hiking in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 6. The possibilities for nightlife and entertainment in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 7. The possibilities for a calm and peaceful stay in Norway..... | 1 | 2 | 3 | 4 | 5 |

|  | not covered at all | | | | fully covered |
|---|---|---|---|---|---|
| 8. Democracy and civil-rights in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 9. The suicide-rate in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 10. The weather in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 11. The standard of living in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 12. The possibilities to experience something new during a vacation in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 13. The possibilities to eat well during a vacation in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 14. The unemployment-rate in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 15. The possibilities to have a reasonably priced vacation in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 16. The possibilities to become physically fit during a vacation in Norway..... | 1 | 2 | 3 | 4 | 5 |

| | not covered at all | | | | fully covered |
|---|---|---|---|---|---|
| 17. Communications and transportations in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 18. The shopping possibilities in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 19. The safety as a tourist in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 20. The possibility to experience clean and undisturbed nature in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 21. The possibilities for cultural experiences during a vacation in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 22. Service and helpfulness in Norway..... | 1 | 2 | 3 | 4 | 5 |
| 23. Norway as a travel destination compared to other Scandinavian countries..... | 1 | 2 | 3 | 4 | 5 |
| 24. Norway as a travel destination compared to other European countries..... | 1 | 2 | 3 | 4 | 5 |
| 25. Norway as a travel destination compared to travel destinations in general..... | 1 | 2 | 3 | 4 | 5 |

## Experiment 3

Each group used a different response-scale for the evaluations, otherwise the questionnaire was identical with that used in groups 1 and 2 of experiment 2. The first evaluation-page in the various groups, is shown on the following pages:

## Section 2

We would now like your opinion about Norway, both in general and as a travel destination. Please, consider each of the following aspects with regard to Norway, and give each of them a score between 1 and 7, where 7 is the best score possible and 1 is the poorest.
It is essential that you give scores to all items, even if your knowledge about Norway is somewhat limited.

Your score

1. The possibility to see and experience
   nature in Norway                                           - - - -

2. The health-care system in Norway                          - - - -

3. The educational system in Norway                          - - - -

4. The swimming possibilities
   in Norway                                                  - - - -

5. The possibilities for hiking
   in Norway                                                  - - - -

6. The possibilities for nightlife and
   entertainment in Norway                                    - - - -

7. The possibilities for a calm and
   peaceful stay in Norway                                    - - - -

8. Democracy and civil-rights
   in Norway                                                  - - - -

## Section 2

We would now like your opinion about Norway, both in general and as a travel destination. Please, consider each of the following aspects with regard to Norway, and give each of them a score from the following scale:

| extremely poor | very poor | | so and so | | | | very good | extremely good |
|---|---|---|---|---|---|---|---|---|
| -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

It is essential that you give scores to all items, even if your knowledge about Norway is somewhat limited.

                                                            Your score

1. The possibility to see and experience
   nature in Norway                                          - - - -


2. The health-care system in Norway                         - - - -


3. The educational system in Norway                         - - - -


4. The swimming possibilities
   in Norway                                                 - - - -


5. The possibilities for hiking
   in Norway                                                 - - - -


6. The possibilities for nightlife and
   entertainment in Norway                                   - - - -


7. The possibilities for a calm and
   peaceful stay in Norway                                   - - - -

## Section 2

We would now like your opinion about Norway, both in general and as a travel destination. Please, consider the following aspects with regard to Norway, and circle the appropriate number. It is essential that you rate all items, even if your knowledge about Norway is somewhat limited.

1. The possibility to see
and experience nature
in Norway is....

| very<br>poor | | | so and so | | | very<br>good | | extremely<br>good |
|---|---|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

2. The health-care system
in Norway is.....

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

3. The educational system
in Norway is.....

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

4. The swimming possibilities
in Norway are.....

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

5. The possibilities for hiking
in Norway are.....

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

6. The possibilities for
nightlife and entertainment
in Norway are.....

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

7. The possibilities for a
calm and peaceful stay
in Norway are.....

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

8. Democracy and civil-rights
in Norway are.....

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

## Experiment 4

The response-scale -5 to +5 was used for all evaluations. In this experiment two manipulation checks were used, one for each film. The manipulation checks are presented on the following pages:

In all other respects, the questionnaire was the same as earlier.

## Section 5

The following questions refer to <u>the film about Norway</u>, you watched earlier in this experiment. Please circle the number that best corresponds to your impression of the film:

|  |  | very<br>tired |  |  |  |  |  | very re-<br>freshed |
|---|---|---|---|---|---|---|---|---|
| 1. The film made me feel..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  | very<br>negative<br>mood |  |  |  |  |  | very<br>positive<br>mood |
|---|---|---|---|---|---|---|---|---|
| 2. The film put me in a..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  | very<br>anxious |  |  |  |  |  | very<br>calm |
|---|---|---|---|---|---|---|---|---|
| 3. The film made me feel..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  | very<br>unaware |  |  |  |  |  | very<br>alert |
|---|---|---|---|---|---|---|---|---|
| 4. The film made me feel..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  | very<br>sober |  |  |  |  |  | very<br>amused |
|---|---|---|---|---|---|---|---|---|
| 5. The film made me feel..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

The following questions refer to <u>the other film,</u> you watched earlier in this experiment. Please circle the number that best corresponds to your impression of the film:

|  |  | very<br>tired |  |  |  |  |  | very re-<br>freshed |
|---|---|---|---|---|---|---|---|---|
| 1. The film made me feel..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  | very<br>negative<br>mood |  |  |  |  |  | very<br>positive<br>mood |
|---|---|---|---|---|---|---|---|---|
| 2. The film put me in a..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  | very<br>anxious |  |  |  |  |  | very<br>calm |
|---|---|---|---|---|---|---|---|---|
| 3. The film made me feel..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  | very<br>unaware |  |  |  |  |  | very<br>alert |
|---|---|---|---|---|---|---|---|---|
| 4. The film made me feel..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  | very<br>sober |  |  |  |  |  | very<br>amused |
|---|---|---|---|---|---|---|---|---|
| 5. The film made me feel..... | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

# Appendix 3

# The knowledge score:

## Distributions and answers
## from median subjects

As mentioned previously, the subjects' knowledge scores were computed from their answers to the questions in section 4. The computational procedure has been discussed in chapter 6.

For experiment 1, where no information about Norway was given, the knowledge scores were distributed as follows:

| Value | Frequency | Percent | Valid Percent | Cum Percent |
|---|---|---|---|---|
| -2.00 | 1 | 1.5 | 1.5 | 1.5 |
| .00 | 5 | 7.7 | 7.7 | 9.2 |
| 1.00 | 9 | 13.8 | 13.8 | 23.1 |
| 2.00 | 5 | 7.7 | 7.7 | 30.8 |
| 3.00 | 8 | 12.3 | 12.3 | 43.1 |
| 4.00 | 9 | 13.8 | 13.8 | 56.9 |
| 5.00 | 11 | 16.9 | 16.9 | 73.8 |
| 6.00 | 13 | 20.0 | 20.0 | 93.8 |
| 7.00 | 2 | 3.1 | 3.1 | 96.9 |
| 8.00 | 1 | 1.5 | 1.5 | 98.5 |
| 9.00 | 1 | 1.5 | 1.5 | 100.0 |
| Total | 65 | 100.0 | 100.0 | |

| Mean | 3.708 | Median | 4.000 |
|---|---|---|---|
| Std dev | 2.310 | Mode | 6.000 |

Valid cases   65   Missing cases   0

The median knowledge score is 4.0, and the answers from one of the median subjects are presented on pp. 254-255. As we can see from the answers, the subject gives a good population-estimate and receives two points for this. The cities are all wrong, that means zero points on question 2. The same is the case for questions 3 to 5. On the last question, the subject gets two right answers, and subsequently receives an additional two points. The knowledge score for the subject is thus 2+2=4 points, which equals the median score.

<u>Answers from one of the subject with median knowledge score in experiment 1 (did not watch the Norway-film)</u>

## Section 4

Now we return to questions about Norway. If you do not know the correct answers to these questions, try your best guess. It is essential that you answer all questions.

1. What is the population of Norway?    _5_    million

2. Name 3 Norwegian cities:    Amsterdam

    Norwegia

    Viking

3. Norway shares borders
   with the following countries:    Switzerland

    Greenland

    Germany

4. The capital of Norway is:

    Amsterdam

5. Name the three most important industries in Norway, i.e. the industries with highest annual sales:

    Fishing

    Dolls

    Clocks

6. Which of the following persons are/were Norwegians?
(Check the appropriate boxes)

☒ Thor Heyerdahl        ☐ Helmut Kohl

☐ King Carl Gustav      ☐ Olof Palme

☐ Julius Stenbakk       ☐ Henrik Ibsen

☐ Edward Munch        ☐ Roald Amundsen

☐ August Strindberg      ☒ Leif Ericson

In the Norway-film it was mentioned that the population of Norway is roughly 4 million, that Oslo is the capital of Norway, and the names of several Norwegian cities were given. Numerous important industries in Norway were also discussed. As for the persons in question 6, the film gave information about Thor Heyerdahl, Henrik Ibsen, and Edward Munch. Although the name Leif Ericson was not mentioned, the film put emphasis on the Viking seafarers, who found their way to the shores of North America more than five hundred years before Columbus set sail. The frequency distribution of knowledge scores for subjects who watched the Norway-film is presented below:

| Value | Frequency | Percent | Valid Percent | Cum Percent |
|---|---|---|---|---|
| -1.00 | 1 | .6 | .6 | .6 |
| .00 | 13 | 7.5 | 7.5 | 8.0 |
| 1.00 | 7 | 4.0 | 4.0 | 12.1 |
| 2.00 | 12 | 6.9 | 6.9 | 19.0 |
| 3.00 | 22 | 12.6 | 12.6 | 31.6 |
| 4.00 | 15 | 8.6 | 8.6 | 40.2 |
| 5.00 | 30 | 17.2 | 17.2 | 57.5 |
| 6.00 | 27 | 15.5 | 15.5 | 73.0 |
| 7.00 | 21 | 12.1 | 12.1 | 85.1 |
| 8.00 | 11 | 6.3 | 6.3 | 91.4 |
| 9.00 | 9 | 5.2 | 5.2 | 96.6 |
| 10.00 | 2 | 1.1 | 1.1 | 97.7 |
| 11.00 | 1 | .6 | .6 | 98.3 |
| 12.00 | 2 | 1.1 | 1.1 | 99.4 |
| 14.00 | 1 | .6 | .6 | 100.0 |
| Total | 174 | 100.0 | 100.0 | |

Mean    4.902          Median    5.000

Std dev    2.743          Mode    5.000

Valid cases    174    Missing cases    0

Because of the information given in the Norway-film the mean knowledge score for the subjects who watched the film, was significantly higher (at $\alpha<0.01$) than that of experiment 1. While the mean knowledge score in experiment 1 was 3.708, it had jumped more than 1 point to 4.902 for the remaining experimental groups. As for the median knowledge score, this was 5.0 for the groups that watched the Norway-film as opposed to 4.0 for the groups in experiment 1.

The answers from one of the median subjects are presented on pp. 258-259. As we can see from the subject's population estimate (20 million), she has obviously not noticed that the population of Norway in the film was said to be approximately 4 million. However, the subject is able to name two Norwegian cities correctly. She also knows that Sweden is one of Norway's neighboring countries, and that Oslo is the capital of Norway. Each of these answers receives one point. Although fishing is an important industry in Norway, it is not among the top three. No points are thus given for this answer, nor does the answer "minerals" receive any points. Thor Heyerdahl is a Norwegian and so was Roald Amundsen. This means two more points. King Carl Gustav is the king of Sweden, and this means minus one point, making the total score five, which is the median knowledge score for the subjects who watched the Norway-film.

Answers from one of the subjects with median knowledge score in the groups that watched the Norway-film

## Section 4

Now we return to questions about Norway. If you do not know the correct answers to these questions, try your best guess. It is essential that you answer all questions.

1. What is the population of Norway?  _____ 20 _____ million

2. Name 3 Norwegian cities:  _____ Bergen _____

_____ Oslo _____

_____

3. Norway shares borders
   with the following countries:  _____ Sweden _____

_____

_____

4. The capital of Norway is:

_____ Oslo _____

5. Name the three most important industries in Norway, i.e. the industries with highest annual sales:

_____ fish _____

_____ minerals _____

_____

6. Which of the following persons are/were Norwegians?
(Check the appropriate boxes)

☒ Thor Heyerdahl ☐ Helmut Kohl

☒ King Carl Gustav ☐ Olof Palme

☐ Julius Stenbakk ☐ Henrik Ibsen

☐ Edward Munch ☒ Roald Amundsen

☐ August Strindberg ☐ Leif Ericson