

**Dissimulation
in the Communication of Emotion**

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for the degree
Doctor of Philosophy in Psychology**

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Abstract

The purpose of the present studies was to examine the impact of dissimulation of emotional expression on the intensity of emotion and subjective emotional experience. In further analysis the degree of subjects' success in expression and subjects' awareness of their expression were also considered. The data were collected both in the period of watching brief emotional stimulus films, and during talking afterwards. After each film clip subjects reported the kind of emotions they experienced, along with a rating of emotional intensity, as well as their believed degree of success in expressing the requested emotion at the beginning, in the middle, and at the end of watching the film clip, and afterwards during conversation, in a free-format questionnaire. 197 male and female university students aged 18-23 served as interviewers and subjects in the four studies conducted.

In the **first study**, the participants were 41 females and 22 males. The stimuli were eleven segments of videotape film clips which were selected for their ability to elicit sadness (five segments), a neutral emotional state (one segment) and happiness (five segments). In some instances subjects were asked to express their feelings to their partner frankly, whereas in other segments, they were instructed to suppress their expression and convince their partner that they were feeling neutrally, that is, that they were not experiencing any emotion. The results of this study show a tendency for females to experience emotion more intensely during silent suppression of happiness, while males' emotional intensity was found to decrease in the suppression of sadness during talking. Furthermore, emotional intensity during silently watching films was found to be greater than that during talking, and except during honest expression in the silent period, males experienced happiness with greater intensity than sadness. In general, subjects reported feeling a neutral state when concealing their expression more often during talking than silence. However, the effects of suppression of sadness or happiness on emotional experience was not the same for females and males. Furthermore, the correlation between the reported degree of subjects' success in hiding their emotions and a correct judgement by the observer was not significant

for females, whereas it was significant for males in the suppression of happiness, showing that, in this context, males had some awareness of their expression.

The **second study** examined substituting the expression of four basic emotions - happiness, fear, anger, disgust - as well as a neutral state, for sadness. 24 females and 26 males contributed in this study, and stimuli were the same five sad film clips as used in the first study. The results revealed that, during silently watching films, the difference between feeling neutral when expressing a neutral state and feeling other emotions while expressing those emotions is trivial. And, during talking, subjects experienced a neutral state nearly as often as anger and happiness (active emotions), while they experienced disgust and fear (passive emotions) with less frequency. In the condition that subjects felt the emotions they expressed, the intensity of emotion during silence did not differ from that during talking, but in general subjects felt emotions more intensely during silently watching the films than during talking. No significant difference was found in subjects' reported degree of success between silently watching films and talking afterwards, when subjects experienced the target emotions. However, subjects experienced the target emotions more often during talking than during silence, but the results are not statistically significant in the expression of fear and disgust.

The **third study** was similar to the second study, with the exception that the stimuli were the happy film segments instead the sad ones. In this study the participants were 26 males and 22 females. Results show that, both during the periods of silence and while talking afterwards, subjects more often felt neutral when expressing a neutral emotional state than they felt other target emotions. And, as in the second study, the intensity of emotion during watching the film silently did not differ from that during talking afterwards, when subjects felt the target emotion, except when it was disgust. But, in some contexts, during the entire experiment, subjects experienced emotions with greater intensity during silence than talking; also they reported more success in expressing the target emotion during silence than talking. In general, subjects felt the target emotions more often during talking than during silence, and this result was statistically significant regarding the expression of fear and anger.

Happy films did not differ significantly from sad films as regards the expression of disgust, while a neutral emotional state was produced more often in happy films, and anger more often in sad films. The results of the second and third studies

taken together show that the degree of females' awareness of their expression was related to whether they felt the target emotion. Females were aware of their expression when they did not feel the expressed target emotion. However, no significant difference was found between males' success and females' success in expressing the target emotion during the sad film, while during happy films females reported that they had more success in the expression of fear and sadness. Furthermore, more significant results were found during silence than talking for males' awareness of their expression.

The **fourth study** was similar to the first, regarding the suppression of expression. The stimuli in this study were twelve film clips selected for their ability to arouse disgust, fear and surprise (four segments of film clips for each emotion). The results obtained show a tendency, in some contexts, for females to experience emotion with greater intensity than males. The suppression of expression was more often observed to yield a neutral feeling for females than males.

The results of the present studies taken as a whole show that context had a very important impact on the acquired results. Many of the significant results of this study were valid for only one combination of conditions.

Introduction

An overview of literature clearly shows that the majority of psychologists claim emotion plays a crucial role in all aspects of human functioning (e.g. Gross & Levenson, 1995), and the study of emotion is central to many different areas of psychology (e.g. Davidson & Cacioppo, 1992). Thus it seems one can better understand human nature by studying emotion (Buck, 1984). Also the study of emotion is important in understanding the relation between mind and body (Hillman, 1960).

Although many investigators believe that emotion is a complex phenomenon (e.g. Lindsley, 1951) and disagree in the definition of emotion (Izard, Kagan & Zajonc, 1984), it is generally agreed that each emotion has three components to its manifestation: subjective experience, physiological, and behavioral changes. A number of studies have revealed that people may not always be aware of the emotion that they experience at a specific moment (e.g. Nisbett & Wilson 1977), particularly with accurate intensity of emotion, while emotional intensity has multiple dimensions, some of which are beyond a person's consciousness (e.g. Tassinari & Cacioppo 1992; Sonnemans & Frijda, 1994).

Turning to the other components of emotion, physiological and behavioral, the majority of researchers claim that the truest manifestation of emotion is the physiological changes which occur at the time of the felt emotion, as they don't obey display rules (governing who will show which emotion to whom, and when) and are not under one's control. I believe there is considerable

doubt on the generalizability of this claim, whereas, a large body of literature reveals that deliberate changes in behavioral expression (e.g. pulling the corner of the lip up to express a smile) can influence the felt emotion. Perhaps the most accessible way to study emotion is to study nonverbal expression, the most exciting and interesting aspect of emotion. But do people really always communicate the emotions they experience? It is clear that they do not: they can deny them, enhance them, or substitute to another one; in other words they may use deliberate expressions which can be termed 'deceptive expression in emotion.'

Systematic research on deceptive expression in emotion began with the work of Ekman and Friesen (1969b) on leakage and cues on deception, but the idea that honest expression is different from dishonest has existed in literature for a very long time. For example, Papyrus Vedas wrote in 900 B.C. how one can recognize a liar (cited by Horvath, 1973).

Many researchers in the field of nonverbal behavior believe that the hard-wired links existing between emotion and nonverbal behavior (particularly facial expression) cause automatic changes in the facial muscles which are different for each emotion (e.g. Ekman, 1972; Izard, 1977). Therefore attempting to stop them or deliberately change them is a difficult task and the process is complicated, particularly as not all of the muscles are under one's control. However, each emotion has specific characteristics of expressive behavior and physiological activity and also it can affect perception of particular emotions (e.g. angry subjects more readily recognized expression of anger than of happiness, and vice versa for happy subjects) (Izard, Libero, 1993; Izard, 1971, 1991; Weiner, Graham & Chandler, 1982). Further, positive effects are different from negative, in that each is related to a

different part of the brain. The majority of investigators (e.g. Tucker, 1981; Sackeim, Greenberg, Weinan, Gur, 1982; Sackeim & Gur, 1983; Leventhal & Tomarken, 1985) in this field believe that the right hemisphere is specialized for negative emotions and the left hemisphere for positive.

Clearly, the effective study of the expression of emotion depends upon the means to arouse the emotion in subjects in the laboratory. In doing so, investigators must be sure that stimuli have comparable impacts on females and males, and the evaluation of data should be considered separately. Nearly a century ago psychologists acknowledged differences in experience and expression of emotion between males and females, some even (e.g. Allport, 1924) believed that the only significant difference in this regard is in their expression. There is evidence showing some correlations found by analysing data from both sexes grouped together may only appear for one sex when the data for the two sexes is evaluated separately. For example while the correlation between the measures for encoding spontaneous and posed expressions were significant for both sexes combined, (Cunningham, 1977; Zuckerman, Hall, DeFrank, & Rosenthal, 1976), this significant result was reliable only for females when the separate correlations were run for each sex (Fujita, Harper & Wiens, 1980).

Nonverbal Behavior and Deception

A large body of literature shows that many researchers support the notion that "*specific nonverbal acts have specific psychological meaning*" (e.g. Ekman, 1964; Mehrabian, 1972; Harman, 1971). Darwin (1872/1965) differentiated the movements affected by emotion or the "will". An obvious application of

the study of nonverbal behavior in deception is that of understanding what a client is feeling during psychotherapy and counselling.

**The facts that make honest behavior different from
deceptive.**

There is sufficient evidence to verify the existence of differences between honest (spontaneous) and deceptive (deliberate, posed, voluntary) behavior. For example Rinn (1984), Ekman, Hager, and Friesen(1981) and Buck (1984) indicate neurological, anatomical and theoretical reasons for these differences, respectively.

Clearly the extent to which nonverbal behavior is important in understanding deception is related to the amount of the experienced emotion during the process of deception (Buck, 1984). Telling a lie without having an emotion is rare (Green & O'Hair, 1985). And even if the lies are not directly about one's emotion, the positive or negative emotional reaction (e.g., guilt, fear, anxiety, delight) to the act of lying accompanies the lie. Therefore I believe that, the combination of one's emotion and the emotion that is aroused by deception has a special complexity that can influence the nonverbal behavior in many contexts.

In support of Zuckerman's (1981) notion, Hess and Kleck (1990) claim that *'telling lies needs higher cognitive complexity than telling the truth'* and also there is evidence that different neurological pathways are mediated in honest and deceptive behavior (e.g., Weiss, Blum & Gleberman 1987), and that different parts of the brain are involved in deliberate and spontaneous behaviors (Miehlke, 1973; Myers, 1976; Ekman & Friesen, 1982; Skinner & Muller,1991; Ekman, 1992).

Further evidence suggests that in deceptive expression the channels of communication vary in the amount of control one has over them; and some channels are more difficult to control than others (Zuckerman, Depaulo, & Rosenthal, 1981; Ekman & Friesen, 1969, 1982), so there is inconsistency in the expression of each channel. For example, a deceiver may have a happy face and a sad voice. Also it seems that the changing of one channel without changing some of the others is not always an easy task (Zuckerman, DeFrank, Hall, Larrance, Rosenthal, 1978), and according to the compensation effect the controlled effect in one channel can 'leak' into another channel (Campbell, 1986; Green & O'Hair, 1985). The deceiver can even forget to change all of the required channels simultaneously (Snyder, 1974; Zuckerman, Depaulo & Rosenthal, 1981), in which case there may not be co-ordination among the communication channels.

Moreover there is the possibility that the deceiver may exaggerate some behaviors, thinking them important (Hess & Kleck, 1990) and display them continuously (Allen & Atkinson, 1981), while really this behavior changes in honest expression from time to time (Buller & Aune, 1987). Furthermore there is a point in the process of deception where the cognitive load of deception is beyond the deceiver's ability, and even controllable channels will reveal the process of deception (Logman, 1983; Green & O'Hair, 1985).

Finally, Tassinary and Cacioppo's study (1992) suggests a different facial electromyographic activity (objective measure) for deliberate and spontaneous expressions.

Cues and Leakage in Deception

As mentioned above one can easily conclude that deliberate behavior is different from spontaneous behavior. In the process of deception, in general it is easier to identify dishonest behavior using 'cues' than to identify the particular emotion concealed by observing 'leakage'. Based on past studies there are many ways in which dissimulated behavior is different from spontaneous behavior. For example, deliberate behavior does not flow smoothly and looks jerky (Zuckerman, DeFrank, Rosenthal, 1978; Atkinson & Allen, 1978; Allen & Atkinson, 1981), it is exaggerated and has great repetition of particular actions (Hess & Kleck, 1990), it looks strange (Brandt, Miller & Hocking, 1980) and like a caricature of spontaneity (Allen & Atkinson, 1981), and the voice does not sound assertive or pleasant (Zuckerman et al, 1978).

The dynamic aspects of facial movement (speed of onset and offset, degree of irregularity) in deceptive behavior are different from in honest behavior. In deceptive behavior onsets and offsets are slower and there is more irregularity in expression (e.g. Ekman & Friesen, 1982; Hess & Kleck, 1990). Furthermore there is disagreement between verbal and nonverbal expression (Argyle, Alkema & Gilmour, 1970).

Moreover some researchers claim that the higher degree of cognitive demand in deception would cause more speech pauses or hesitation, pupil dilation (Zuckerman, Koestner, Driver, 1981; Lykren, 1979), longer response latencies and fewer illustrators (Zuckerman et al, 1981), blinking, and speech errors (Lykren, 1979). However, Green and O'Hair (1985) in a review of

literature conclude that across many studies there is agreement that pupil dilation, shrug rate, use of adaptors, speech errors, hesitation and vocal pitch are indications of deceptive behavior (e.g. Hocking, Miller, Fontes, 1978; Zuckerman et al, 1981). Also they claim that eye contact and, in general, controllable facial expressions are not good indicators of deception, while involuntary physiological changes (e.g., heart rate, pupil dilation,..etc) are better for the recognition of deceptive behavior. I believe that this claim would be tenable if the voluntary changes of expression did not influence physiological indicators; however, because there is much evidence to show that this influence does exist, I regard this claim with some doubt.

Finally, many investigators believed that out of the face, body and voice, the body is more accurate than the face in revealing deception (Ekman & Frisen, 1969; 1982; Zuckerman et al, 1981), while most accurate is the voice (Zuckerman et al, 1981).

The Lack of Generalizability of Leakage and Cues in Deception

The lack of consistency in cues and leakage in dissimulative behavior across studies suggests that it is an oversimplification to generalize any type of clue across all types of lies. As some of the researchers (e.g. O'Hair, Cody, 1981; Hocking, Miller & Fontes, 1978) emphasized, the context of a lie has an enormous effect on the deceptive behavior. There are no specific clues to deception across all types of lies (O'Sullivan, 1988, O'Hair et al, 1981), and different aspects of behavior may reveal deception in different people (Ekman, Friesen & O'Sullivan, 1988). For example, some researchers (e.g. Mehrabian, 1971; Knapp, Hart & Denis, 1974 & Kraut, 1978) demonstrate a

shorter duration of response for dissimulated behavior, while others (e.g. Matarazzo, Wiens, Jackson & Manaugh, 1970) find no difference between deceivers and non-deceivers in respect to this issue. Furthermore McClintock and Hunt (1975) and Feldman, Devin, Sheehan & Allen (1978) believe that deceivers smile less than truth-tellers, while Mehrabian (1971) reaches the opposite result, finding that liars smile more. Kraut (1978) and Finkelstein (1978) claim that there is no association between the frequency of smiling and telling lies, and honest behavior is no different from dissimulation with respect to how often one smiles.

Furthermore Exline, Thibaut, Hickey & Gumpert (1970) and Knapp, Hart & Dennis (1974) found that liars made less eye contact, while Matarazzo, Wiens, Jackson, & Manaugh (1970); McClintock and Hunt (1975) did not reach any significant result with respect to the amount of eye contact. However some researchers (e.g. Ekman & Friesen, 1969a) demonstrated that liars had more leg and foot movement, whereas others (e.g. Mehrabian, 1971; McClintock & Hunt, 1975) found more postural shifts occurred during deception. Darwin (1872) lent credence to the lack of generalizability of leakage and cues in deception when he suggested that "*an individual's emotional predispositions could leave a permanent imprint on the face as a function of a life of particular expressive habits.*"

I believe that the reason for a lack of generalizability of leakage is very clear: every emotion has a different expression, and the combination of each emotion with each of the feelings (e.g., fear, anxiety, delight, guilt) accompanying the act of lying for each person has a specific complexity, making it hard to describe the type of leakage in every situation. Therefore, in agreement with some researchers, one can conclude that the relationship

between cues and leakage in deception is far from perfect, and it is difficult to generalize since different types of lies in different situations lead to different types of leakage.

Smiles in Deception

As mentioned above, most researchers who study leakage in deception are misled by the smiles that someone shows when lying. The study by Ekman & Friesen (1982); Ekman, Friesen and O'Sullivan (1988); and Ekman (1992) offers the reason for this error. They claim that the crucial matter that these investigators, in respect to the smile, have neglected is the kind of smile, as opposed to the frequency of smiles, which in fact can differentiate deceivers from non-deceivers. They believed that these researchers made a mistake in their measurements in treating all types of smiles as the same, while in fact *"people smile differently when they lie."*

Duchenne (1862/1990) postulated that a smile of positive feeling is different from a deliberate smile in the muscles activity involved. When people are actually enjoying themselves, two facial muscles around the lips (zygomaticus major) and the eyes (orbicularis) are active. In a deceitful smile, however, the second muscle (around the eyes) is not active, since it is not under one's voluntary control. Ekman and Friesen (1982) believe that there are also other ways in which a true smile is different from a false (deliberate) smile. In a false smile, in addition to the lack of muscle activity around the eyes, there are other muscles used which are not active in a true smile. Also the onset is shorter, the offset is irregular and jerky, the duration of apex is longer, and similarly the other deceptive expressions are more asymmetric than in a true smile.

Furthermore, Ekman, Friesen, O'Sullivan (1988) describes two kinds of false smile: phoney and masking. They state that although in both types of smiles, phoney and masking, deceivers try to convince others that they feel a positive emotion which they do not really feel, in a masking smile deceivers have a negative felt emotion and attempt not only to produce a happy face but also to conceal a negative felt emotion, so that some of the signs of negative emotions may persist. In a phoney smile a deceiver tries to express happiness while in fact not feeling any emotion. Ekman believes that there are 17 other kinds of smiles.

Lateralization

The study of brain lesions shows that different parts of the brain are involved in deliberate and spontaneous behaviors (e.g. Skinner & Muller, 1991; Myers, 1976; Miehke, 1973), for example the neural pathway used in a true smile is not the same as in a false smile (Ekman, 1992). Also there is some evidence showing that the right hemisphere contributes to negative emotions and the left hemisphere contributes to positive emotions (Reuter, Lovenz & Davidson, 1981; Sackeim, Greenberg, Weinan, Gur, 1982; Leventhal & Tomarken, 1985;). Therefore it is more likely that the left side of the face expresses negative emotions and positive emotions appear on the right side of the face (Skinner & Muller, 1991). Also a number of studies suggest that the left side of the face is more expressive than the right (e.g. Borod, Koff & White, 1983; Campbell, 1978; Skinner et al, 1991; Davidson, 1992), for example there is a belief that if people control their emotions they will remain younger looking on the left side of the face (Indian Saddhus, cited Tao,1989). Taken together the results of this research gives good reason to

believe the possibility, as some researchers (e.g. Borod & Koff, 1984) suggest, that deliberate positive expressions are symmetrical, while deliberate expressions of negative emotion are asymmetrical (e.g. Warga, 1982; Schiff & McDonald, 1990; Borod & Koff, 1984). Further evidence shows that the lower part of the face would reveal the existence of asymmetry in expression to a greater extent than the upper part (e.g., Brockmeier & Ulrich, 1993).

Types of Lies

Another issue which sheds light on the lack of generalizability of leakage in deception is the association of leakage in different situations, That is, in different contexts a deceiver gives different leakage . Apart from the fact that lies about factual information are different from lies about felt emotions, there are two other dimensions in deception: the level of motivation to succeed, and the amount of preparation for the lie (whether it is planned or spontaneous).

There is considerable agreement that highly motivated liars give more clues in deception than mildly motivated liars, and therefore are more easily recognized (e.g. Zuckerman, Depaulo, Rosental, 1981; Eiaad & Shaknar, 1989). Also highly motivated liars give away different types of cues and leakage, since they try harder to control their behavior, and thus they may have more rigid behavior, less movement, less blinking and fewer adaptors (e.g. Zuckerman et al, 1981). In general highly motivated liars have more control in controllable channels, particularly verbal expression, than in non-controllable channels. In other words nonverbal behavior gives more clues to deception than verbal expression (Depaulo, Lanier & Davis, 1983). However there is a limit to the control of verbal expression; beyond a point of

motivation deceivers do not have control of their verbal expression or other controllable channels (Depaulo, Zuckerman, & Rosenthal, 1980a; 1980b; Depaulo, Stone & Lassiter 1985). Further, some of the researchers (e.g. Depaulo, Lanier & Davis, 1983) believe that at each level of motivation deceivers reveal different types of clues to deception.

We turn now to the differences between telling premeditated lies and spontaneous lies (Ekman, Friesen, 1969; 1974; Hocking, Bauchner, Kaminski & Miller, 1979). Although the level of preparation has a less dramatic effect than the level of motivation on cues in deception (Zuckerman, Koestner, Driver, 1981), previous studies indicate that deceivers with prior preparation may conceal some cues to deception, but instead give other types of cues (Ekman & Friesen, 1969; 1974, Hocking, Bauchner, Kaminski, Miller, 1979). There is evidence showing that prepared liars have more dilated pupils, engage in more postural shifts, increase long body adaptors, speak faster, display more affirmative head nods (O'Hair & Cody, 1981; Zuckerman & Driver, 1985) and particularly respond more quickly (O'Hair & Cody, 1981; Zuckerman & Driver, 1985; Zuckerman et al, 1981) than deceivers who give spontaneous lies. Perhaps the most obvious cue to spontaneous lying is the increased rate of body adaptors (Hocking et al, 1979), whereas the shorter latency is the best clue to planned lying, since unprepared liars take time to prepare their responses (Zuckerman et al, 1981; Green & O'Hair, 1985).

Furthermore, lies can be classified as deception regarding factual information and deception about one's feelings (Ekman & Friesen, 1969; 1974; Hocking et al, 1979; Zuckerman, Depaulo, Rosenthal, 1981). It is obvious that lies not directly about emotion have less complexity than lies about emotions,

because liars must disguise only the emotions they feel about lying (Ekman, 1988). Some of the evidence indicates that the best source of information about emotional deception is in body motion, and the head gives more accurate cues about factual deception (Hocking, Bauchner, Kaminski & Miller, 1979).

Moreover, it is clear that telling lies to friends or intimates is different than telling the same lies to strangers (Buller, Aune, 1987). Finally I believe that any effective study of cues and leakage in deception must distinguish between the various situations. For example, telling a lie with high motivation and low preparation about a sad memory to a friend is different from any other situational combination. With respect to this issue O'Hair and Cody (1981) compared honest responses with deception about factual information in both the cases of telling lies with preparation or without preparation. They found that prepared liars had shorter latencies, more affirmative head nodding, less smiling, more body adaptors and a shorter answer, in comparison with honest responses, while spontaneous liars had more body adaptors.

Encoding and Differences among Emotions

The different physiological and expressive patterns existing among emotions are the cause of the differences among emotions (Ekman, 1977, 1984 1992). Each emotion has a specific expression that differs from the others, (clearly, not with the same extent, in other words there are more similarities among some of them than among the others). For example, Wallbott (1988), in agreement with some other researchers, found that a sad person talks very slowly and with low intensity and has unexpansive movements with low

energy (sadness is a passive emotion). In contrast an angry person has energetic movements and talks very fast and with high intensity (anger is an active emotion).

Clearly some of the emotions are harder to pretend than others. For instance, from the six basic emotions -sadness, fear, disgust, surprise, happiness and anger- (Ekman, Sorenson & Friesen, 1969b; Izard, 1971; Ekman, 1984), it may be most difficult to change all the required facial muscles for expressing fear and sadness, but easier for happiness and surprise, and with intermediate difficulty for anger and disgust (Ekman, Roper & Hager, 1980; Levenson, Ekman & Friesen, 1990). This difference may simply be due to practice and experience.

However some researchers did not support this order of difficulty in voluntary expression, particularly if the emotion was produced in a different way. For example, self-report and physiological measure show that from the four emotions of sadness, anger, joy and fear, when produced by imagery, it is easier to produce sadness with a high intensity than other emotions. Fear is the most difficult emotion to induce while anger and joy fall midway (Gollnisch & Averill, 1993).

The lack of success in inducing fear compared to sadness may be due to the different strategies people use when they want to convey these emotions through imagery. In general, perhaps, people imagine a past sad experience when they wish to appear sad, while for fear they may imagine a bad event that may happen to them in the future; therefore these two emotions have different mental effects. This is, because the effect of remembering real experience is stronger than imagining unexperienced incidents. However,

Lang (1980) and Schwartz, Weinberger, Singer, (1981) did not support this claim; they found that Subjects could experience intense fear using imagery. Furthermore, the difference between right side of the face from the left side, in expression of emotions, shed more light on the differences among emotions. As mentioned earlier, according to the differences between the right and left hemispheres in respect to the expression of emotion, positive (or 'approach') emotions would be shown on the right side of the face while the left side of the face would express the negative (or 'avoidance') emotions (Schwartz, Ahern, Brown, 1979; Tucker, 1981; Reuter, Lovenz & Davidson, 1981; Sackeim, Greenberg, Weinan, Gur, 1982, Leventhal & Tomarken, 1985).

Further there is a claim (Zuckerman et al, 1981) that the channels of communication giving clues to deception are related to the type of emotion, that is, whether the emotion is positive or negative. It may be, for instance, that the more controllable channels (e.g., the face) indicate a positive feeling, while a negative feeling will be indicated in the less controllable channels (e.g., body and voice).

Finally, in everyday life, some of the emotions are more often felt than others, and sometimes it is desirable to express emotions appropriate to some situation, for example the expression of sadness at a funeral. Other emotions are generally less acceptable to express, such as jealousy. Therefore I believe that having more practice in expressing some emotions voluntarily, and in suppressing other emotions, has an important influence on the differences among posed expressed emotions.

A number of studies demonstrate that, in general, there is no relationship between encoding (sending) and decoding (receiving) ability in emotional communication, unless in specific circumstances. For example, an individual who is good at sending a given emotional message is not necessarily also good at interpreting emotional communication (Harper, Wiens & Matarazzo, 1979; Bond, Kahler & Paolicelli, 1985).

Decoding of Emotions in Deception

As mentioned above, the ability to detect deception is unrelated to the ability to deceive (Depaulo & Rosenthal, 1979; Morency & Krauss, 1982). Generally in decoding deceptive behavior people ignore the channels which are more revealing of deception (Ekman, Friesen, O'Sullivan, 1988), and instead notice cues which do not discriminate honest from deceptive behavior (Hurd & Nollen, 1988; Ekman, 1988). For example, Riggo and Friedman (1983), in their study on leakage and cues in deception, found that deceivers had more eye contact when they lied, while people commonly believe that eye contact is a sign of honesty during communication.

In order to make an accurate analysis of deceptive behavior, there should be a sample of honest behavior for comparison; particularly, the decoder (judge) should see the honest behavior first, before the deceptive behavior. O'Sullivan, Ekman & Friesen, (1988) in their study found a greater significant recognition of deception in situations where honest and dishonest behavior were available for comparison than the recognition that was based on only a single sample of honest or deceptive behavior. Furthermore, the crucial issue that a decoder should keep in mind in decoding deceptive behavior is the "*controllability rule.*" According to this rule, those channels of

communication which are not under one's control, and are beyond one's conscious awareness (Goffman, 1959), are those which reveal deceptive behavior (Kraut, 1978). Particularly in highly motivated deception, liars try harder, in pretending that they are honest, but they are successful only in the controllable channels, to a certain limit (Depaulo, Zuckerman, & Rosenthal, 1980; Depaulo, Lanier & Davis, 1983). Deceivers with a high level of motivation do not have any control over both usually controllable (face, verbal expression) and uncontrollable channels (body, voice). In general professional clinicians rely upon these uncontrollable channels in their judgement.

The most surprising issue in decoding deception regards the situation in which truth-tellers look dishonest and express behavior typical of deceivers during lying. Because they have the same feelings that deceivers usually have (e.g., fear guilt, delight, anxiety), so the effect of having these emotions is apparent in their behavior. For example an honest person may give the same clues that deceivers usually do (fear of being disbelieved), if she/he thinks that there is suspicion of her/him telling a lie (Ekman, 1985; Bond & Fahy, 1987).

Moreover, decoders who look for honest behavior judge deceptive behavior in a different way than those who look for deception, and usually they have less success in detecting deception (Zuckerman & Larrance, 1979).

The Effect of Context on Decoding of Emotion

One interesting issue in the recognition of emotion is the extent to which context affects the judgement of emotion. Russell (1991) claims that the

researchers who ignored the effect of context on the judgement of emotion made a mistake in doing so, since the judgement of emotional expression is related to the context in which the judgement is made. Russell found that an expression which in one context was judged as happiness was in another context recognized as sadness, in judgements of photographs, when he changed the order of the pictures. Thayer's study (1980) corroborates this claim; he found that later judgements of facial expressions were affected by viewing prior expressions, and in particular expressions were perceived with greater intensity if there was contrast between the expressions.

Furthermore Wallbott (1990) suggests that context is an important influence on the effect of judgement about emotion, but not as much as facial expression. Which of them (person or context) is more important depends on the amount of discrepancy or similarity that exists between these two types of information. Some researchers believe that in general facial information is more important than contextual information, except if the information provided from context has greater intensity and is more clear than that provided by facial expressions (Frijda, 1969; Watson, 1972; Wallbott, 1988a). Others suggest that contextual information is more important than facial information (Goodenough & Tinker, 1931; Cline, 1956).

The effect of familiarity is another factor that affects the judgement of deception (Bauchner, 1978) and the type of clues that deceivers reveal in deception (Buller & Aune, 1987). The accuracy of recognition of deception increases with the level of familiarity with the honest response, but there is a limit, and if it is exceeded, this familiarity has a negative affect. For example, Brandt, Miller and Hocking (1980) investigated the effect of watching honest behavior 0, 1, 2, 3, and 6 times before watching deceptive

behavior, and found that the level of accuracy in recognition increased with increased familiarity with honest behavior, except when honest behavior was shown 6 times. In support of this assertion, Bauchner (1978) demonstrated that friends have more success in detecting deception than a spouse or strangers. The lack of familiarity on the one hand or overload of information with the knowledge of too many details of behavior on the other hand are possible explanations for this finding.

Decoding of Emotion and Differences Among Emotions

A large body of literature suggests that some of the emotions are more difficult to recognize than others. Some researchers believe that anger is distinguished better than others, followed by sadness, while happiness and particularly surprise are more difficult to recognize accurately (e.g. Wallbott and Scherer, 1988). In support of this claim some other researchers assert that overall, negative emotions are recognized more easily than positive emotions (e.g. Gallois & Callan, 1986).

It is obvious that the recognition of spontaneous (honest) expression is different from that of posed or deliberate (dishonest) expression. Wallbott (1988), in his study of the four posed emotions (sadness, fear, joy and anger), found that joy and anger (active emotions) are distinguished better than sadness and fear (passive emotions). Montepare (1987) asserts that there are various reasons why one emotion is recognized more easily than others, and Wigger's suggestion (1982) offers one of these reasons. He indicates that the shared action among some of the emotions is a reason for the difficulty in recognizing these emotions (e.g., fear and anger, particularly when brow raising does not occur in the expression of fear). Furthermore I

believe it is obvious in everyday life that some of the emotions would be expressed more often than others, even if they are not experienced at the time. For example, in general the frequency of feelings of disgust or surprise in a day would be less than the frequency of feelings of happiness or sadness. Therefore having practice in expressing some felt or unfelt emotions more than others may affect the way in which one expresses those emotions, and in turn may affect the recognition of that emotion. Further, Ekman (1971) found that certain parts of the face give more information about an emotion than others. For example, one can recognize sadness better from the eyes and happiness better from the lower part of the face.

Some researchers (e.g. Levenson, Ekman & Friesen, 1990) claim that the autonomic differences existing between emotions are indications of emotion, and believe that heart rate, finger temperature and skin conductance are the most reliable measures in distinguishing emotions. Particularly, they emphasized that heart rate is the best indication of differences between positive and negative emotions, while skin conductance measure is good for judging the intensity of emotion.

Moreover FAST, Facial Affect Scoring Technique, (Ekman & Tomkin, 1971); FACS, Facial Action Coding System (Ekman & Friesen, 1978); EMFACS, the supplement FACS that consider only emotional expression; and EMG, Facial ElectroMyoGraphy (Fridlund & Fowler, 1978); are important tools for objectively measuring facial expression.

Intensity of Emotion

The intensity of emotion refers to the strength of the emotion. Clearly emotions vary in intensity; in general when one describes one's emotional

experience, one refers to its intensity. Unfortunately a review of literature shows that systematic study on the intensity of emotion is rare, although Frijda, Ortony, Sonnemans, Clore, 1992; Reisenzain, 1994 claimed "emotion intensity should be one of the major issues in psychology of emotion". I agree with the researcher (e.g. Clark, 1992; Reisenzain, 1994) who believes that the lack of attention to the intensity of emotion in empirical studies casts serious doubt on the accuracy of the findings. For example if the purpose of the study is to compare emotions, one must take care that stimuli elicit comparable intensities. Otherwise it may be that the obtained differences among emotions are due to the differences that exist among the intensities of aroused emotions.

Some researchers believe that the measure of intensity of emotion is not an easy task and has methodological problems (Sonneman & Frijda, 1994), because it is multidimensional (Tassinary & Cacioppo, 1992; Clark, 1992) and the correlations between dimensions are not linear. For example, of the subjective, physiological, and behavioral dimensions, one may be greater, or increase more than the others. Furthermore the structural form of the dimensions of each emotion may differ. Therefore measuring only one dimension of the intensity of emotion cannot predict the other dimensions (Sonnemans & Frijda 1994; Tassinary & Cacioppo, 1992).

It may be that subjective report about the overall felt intensity of emotion, does not lead to accurate information. Overall felt intensity may have a different meaning for different emotions (Clark, 1992; Sonnemans & Frijda, 1994), for example for anger it may refer to the action tendency, while for fear it may refer to the felt peak (Clark, 1992). Moreover it may be that two

emotions are equally intense in one dimension while in another dimension one emotion is stronger (Clark, 1992).

Furthermore, there is evidence that an emotion should have sufficient intensity that one becomes conscious of the existence of that emotion (Davidson, 1992; Tassinari & Cacioppo, 1992). Their study shows that at low emotional intensities the link between self-report and observed facial expression is not significant. For intense emotions, however, there is coherence between self-report and facial expression. Further, the link between physiological change and behavior is not related to emotional intensity (Rosenberg & Ekman, 1994)

There is a belief that the level of intensity of emotion that a person feels is related to the type of his/her personality. A person who feels negative emotions with high intensity also experiences positive emotions with high intensity (Larsen & ED Diener, 1985), and the rate of emotional intensity is not always related to the level of the intensity of the stimulus. Some people report their feelings with high intensity even for low levels of stimuli (Larsen & Diener, 1984). A good question is, what is different about these people (who feel emotions with high intensity) to make them experience emotions more intensely? Beck's assertion (1976) may offer a good answer to this question. He described a category of people ("high affectively intense people") whose interpretation of external events involves much personalization, overgeneralization, and selective abstraction. To personalize an event is to interpret it in a self - referential manner. To overgeneralize is to draw unreasonable conclusions about the world on the basis of a single event. In selective abstraction, an event is interpreted as only having meaning in the emotional realm. People from this category are believed to

experience life with more intense emotion than others. This assertion may provide an explanation for the findings showing that females experience emotion more intensely than males (Grossman & Wood, 1993; Gross & Levenson, 1995), as there is an idea that females are more personal in their emotional expression (Allport, 1924).

The Effects of Emotional Dissimulation on Subjective Emotional Experience

The relationship between emotional expression and the experience of emotion is one of the most important issues in the study of emotion, and the crucial matter is to find, whether expression is the consequence of experience or experience is a result of expression. An overview of literature shows that the argument about the effect of expression on emotional experience, from a theoretical point of view, has long existed in the literature. For example William James (1890) proposed that feelings of an emotion are the result, rather than cause of emotional behavior. Therefore if one can express an emotion one feels that emotion too.

Darwin's idea was similar to James' in that he believed that the subjective emotional experience and physiological response are related to expression, and inhibition of expression could attenuate emotional experience and physiological response. The majority of empirical studies since the 1970s support this claim. For example, Duclos, Laird, Schneider, Sexter, Stern, Vanlighten (1989); Duncan and Laird (1977, 1980); demonstrated that emotional experience is associated with facial expressions, in other words voluntary changes of facial expression should produce the emotion related to the expression. Studies by Ekman, Levenson and Friesen (1983); Levenson,

Ekman, and Friesen (1990); Levenson, Ekman, Heider and Friesen (1992) indicated that both subjective emotional experience and physiological reactions seem to be affected by manipulating facial action. Also, Gellhorn (1964); Izard (1971); James (1884); and Tomkins (1984); support Darwin's theory.

Furthermore McCann and Anderson (1987); Strack, Martine and Stepper (1988), found that subjects reported that they were less amused when they tried to suppress the expression of amusement. Zuckerman, Klorman, Larrance and Spiegel (1981), showed that Subjects who responded naturally to their feelings about pleasant and unpleasant films, or who exaggerated their expression, had greater physiological arousal than subjects who tried to be neutral and did not express their emotion. Further Laird (1974) demonstrated that those subjects who watched cartoons while smiling reported that film was more humorous than the subjects who frowned whilst watching cartoons.

Moreover Berridge and Zajonc (1991), postulated a causal link: they claimed that facial action alters hypothalamic temperature, which in turn affects subjective emotional experience.

However, not all findings support Darwin's theory. There are some researchers who believe that the association between expression of emotion and emotional experience is negative, and cite empirical evidence in support. They claim that hiding one's feelings results in an increase in arousal or physiological change,(e.g. Waller 1919; Landis 1932; Jones 1935,1960 and Cannon 1927). According to this claim "*emotion is viewed as a form of energy and as such must follow the basic dynamic of energy conservation.*

As a person becomes emotionally aroused, the arousal must be discharged either directly through expression or indirectly through internal pathways. When an emotional reaction is directly expressed through the facial musculature or other overt expressive channels, physiological reactivity is attenuated". (Notaricus & Wemple, 1982).

Buck (1979); Field and Waldon (1982); and Jones (1950), concluded that various emotional stimuli produced more physiological change when subjects (both children and adults) inhibited their expression. Regarding this view, Marshall (1972) noted the common belief that "*bottling up an emotion will only mean that it will find another outlet*". Cacioppo (1992) suggested that according to arousal theory if one masks one's expression, an unbalanced situation between the internal and the external would occur, which could increase the effect of any stimulus. These researchers (e.g. Engels & Wittkower, 1980; Watson Clark, 1984; Grossarth, Maticek, Bastiaans, Kanazir, 1985; Pennebaker, 1989) demonstrated a positive relationship between the expression of emotion and physical health.

Furthermore Lanzetta (1976) in a literature review concluded that there are three theories regarding the effect of emotional expression on feeling: first the idea that expressive behavior does not influence emotional experience, second, the view that controlling overt reactions to emotional stimuli leads to reduced emotional arousal and third, the view that the relationship between feeling and expression is negative, i.e., expression attenuates the experience of emotion.

It is clear that evidence supporting the theory of a positive relationship between facial expression and other components (physiological, subjective experience) of emotion outweighs evidence supporting other theories.

Moreover Gross and Levenson (1993) concluded that, inhibiting the expression of emotion produced mixed physiological changes (e.g decreased heart rate but increased blinking), some of these being signs of increased arousal and some of decreased arousal. They suggested that "physiological effects of emotional suppression may be emotion specific". Also one possible explanation they offered for the contrast between their findings and those in the previous literature is that there are important differences between the basic processes of emotional expression and suppression which were not taken into account in the literature.

Finally one should not ignore the existence of individual differences in the effects of expression on feeling. Some people may feel what they express, for example they feel happy when they smile and angry when they frown deliberately, but others may not (Malatesta, Jonas & Izard, 1987; Laird, & Bresler, 1990; Laird, Alibozak, Davainis, Deignan, 1994)

I believe that Zajonc and McIntosh's idea (1992) "*when brilliant people disagree on an important and difficult issue, it is quite likely that they are each partly correct*" is very likely true in this dispute. Also one clear possibility for these inconsistent results arises from the differences that exist among the conditions of experiments and the variety of measures that researchers used for their studies.

Awareness in Emotional Expression

Are people aware of what appears in their expression while they communicate to others? Is there similarity or discrepancy between one's perception of one's expression and others' perception of them? To what extent and under what conditions? Finding the answers to these questions would be interesting. But it is surprising that this important issue of expression is so neglected in the literature. Apart from a few exceptions, there are not many empirical studies on this important issue. A number of studies that examined the association between self-report and observers' judgements about emotional expression suggested a discrepancy between these two variables. In general people don't perceive their expressions the way that others perceive them. For example, Riggio, Widaman and Friedman (1985) claimed that there is no association between the actual and perceived encoding ability. In support of this finding Zuckerman, and Kestner (1981) showed that, in posed expression, a subject's real ability and self-report of their success in expression were different, and thus subjects were not aware of their expression.

Furthermore in Barr and Kleck's study (1995), subjects reported having greater intensity in their positive posed emotional expression than a judge did (this result was not significant in spontaneous expression). Moreover Nisbett and Wilson (1977) suggest that perhaps people don't have access to their higher-order mental processes in some contexts. Although these researchers discuss the lack of awareness of one's expression, particularly in a posed situation, I believe we cannot rule out this suggestion, while there is not sufficient evidence to support it.

Sex Differences in Emotional Expression

As mentioned above, psychologists admitted the importance of sex differences in emotional expression from a long time ago, and some even claimed that the most significant difference between the sexes is in respect to their expression (Allport, 1924). The ignoring of sex differences in the laboratory as relevant to the evoking of emotion, particularly if the combined data are analyzed, casts serious doubt on the accuracy of the findings. For example Buck, Baron, Goodman and Shapiro (1980) demonstrated that the differences between the females and males' response to the stimuli was related to the type of emotional stimuli. They found that males were more expressive than females in viewing sexual slides while females were more expressive in response to negative (injury) stimuli. Furthermore as mentioned earlier, there is evidence to show that results found from two sexes combined are sometimes found for only one sex when the data are analyzed separately (Fujita, Harper & Wiens, 1980). However, the important issue that the majority of researchers largely ignored in their analysis, on sex differences, is the differences that exist within sexes; it is obvious that some females are different from others in some aspects of their communication.

Some researchers in emotional communication (e.g. Maccoby, 1990; Grossman & Wood, 1993) argue that sex differences are the consequence of socialization and of having different roles in society. In general, it is argued that more females than males become involved in responsibilities requiring the expression of emotional sensitivity. Therefore females have more

experience than males in expressing their feelings. Eagly & Steffen (1984) believe that if males and females had equal roles in society, sex differences in emotional communication would be eliminated. The majority of reported research on sex differences in expression are focused on receiving and/or sending emotional messages (posed and spontaneous), and the intensity of emotion. However, most of studies are too general and there is not sufficient evidence of sex differences in particular contexts or for specific emotions.

With respect to the intensity of emotion, Grossman et al's (1993) study revealed that females' experience of emotion is more intense than males'. More specifically, they reject the idea that the greater intensity of females' emotion is the result of differences in labelling or scaling, and their evidence for this claim is the greater physiological change that females show in addition to their self-reports. They also found that it is difficult for males to enhance their expression while it is not easy for females to attenuate responses to negative emotional events. The view that females express more emotion and feel emotion with more intensity is further supported by Allen & Haccourt (1976).

Furthermore the superiority of females over males in encoding emotions is reported by most researchers (eg., Buck, Miller & Caul, 1974; Hall, 1979; Haviland & Nolatesta, 1981; Hall, 1979; 1984). Overall the study of posed (e.g., Buck, Sarin, Miller & Caul, 1972; Hall, 1984; Tucker & Riggo, 1988;) and spontaneous emotions (e.g., Buck, Miller, Caul 1974; Fujita, Harper, Wiens, 1980; Buck, 1984) confirm the finding that, in general, females are more able to convey their feelings than males.

Considering specific emotions, Wagner, MacDonald & Manstead's (1986) study revealed that positive spontaneous emotions are encoded more accurately than unpleasant ones. This result is corroborated by Thompson and Meltzer's (1964) study of posed expressions. Wagner et al also found that females were better than males at encoding surprise and a neutral state. Moreover, Buck, Miller & Caul (1974) claimed that females have an advantage over males in expressing positive feelings. This finding is consistent with Wood and Rhode's (1989) view that females experience greater positive emotion than males. In contrast, Gove (1972; 1978); Gove and Tuder, (1973) reported that females experience more negative emotion than males.

A more specific example of the inconsistency of the literature is given by studies of the experience and/or expression of anger. Some researchers (e.g. Averil, 1983) conclude that there are no sex differences, while others believe that males experience and/or express anger more often than females, and still others claim that females experience more intense anger than males (e.g. Friedman, 1980). However Wallbott (1988) found that male actors were superior in the expression of anger (an active emotion), while female actors were more successful at pretending to feel sadness and fear (passive emotions). A review of the literature therefore shows that the view that females have an advantage over males in experiencing and expressing every emotion other than anger outweighs evidence against this view.

However, in contrast to the female advantage over males in sending emotional messages, their general superiority in receiving emotional messages in every context is not supported. For example, Hall (1978, 1979, 1984) concluded that females are generally better decoders, except for

deceptive communication. In support of this idea, Hurd & Noller (1988) argued that females, in decoding males' messages, rely on the overt response rather than covert signs. This conclusion is consistent with Rosenthal & Depaulo (1979), who claimed that females are superior to males in decoding honest communication. There is other evidence to show that females are generally better at decoding all forms of communication; for example, Gallois and Callan (1986) demonstrated that, overall, females decoded nonverbal behavior better than males. Furthermore, they found that females' negative feelings were decoded more accurately than males' by female decoders, whereas males' neutral state was recognized better than females' by male decoders. In other words they claimed that males may understand males's neutral states better than females' neutral states, while females decode females' negative feelings better than males' negative feelings. Moreover there is evidence to show that the lies told by females were recognized better than the lies told by males (Depaulo, Stone & Lassiter, 1985).

With regard to the decoding of expression across emotions, Wagner, MacDonald and Manstead's study (1986) revealed that the expression of happiness was best recognized. Next was the recognition of disgust and anger, whereas no accuracy was found in the recognition of sadness, neutral, surprise and especially fear. The result that happiness was recognized best and fear worst is consistent with Friedman's (1980) and Zuckerman's (1975) findings on encoding posed emotions. Furthermore Wagner et al's analysis found that sex differences were significant only for anger, with the finding that males recognized anger significantly better than females.

One interesting issue regarding emotional expression is the relationship between actual success and the perception of success in sending an emotional

message, particularly with respect to sex differences. A number of studies reveal that subjects are not aware of their real ability to express posed emotions. They did not analyse sex differences in this context, although the sex differences in accuracy at decoding and encoding expression is widely believed in literature. I believe that the differences in males' and females' encoding and decoding ability should influence the accuracy of awareness of their expression

Overview of Present Studies

A review of literature reveals some inconsistent findings in studies on dissimulation of expression; this may be due to inconsistent experimental settings or using different measures, and particularly ignorance of the effects of specific contexts on the outcome of the study. It seems that more evidence is needed to reach conclusions about this issue. It may be that in different contexts, different views asserted in the literature are tenable. The main aim of the present investigation is to determine under which conditions which theories are more applicable. And it may be, to find the cause of some of the disagreement.

In the present studies it was attempted to find: the differences among emotions in the effects of dissimulation of expression on subjective emotional experience; subjects awareness of their expression; and changes of the intensity of emotion in dissimulation of emotion, with regard to periods of silence while viewing emotional film segments and when talking. Also sex differences in the analysis of data were considered.

In these studies, six basic emotions, sadness, fear, anger, surprise, happiness, and disgust, as well as a neutral state, were selected for study. The reason for selecting these emotions was that there is some agreement (e.g. Ekman, Sorenson & Friesen, 1969; Izard, 1971; Ekman, 1984; Tassinary and Cacioppo,1992) that the states of these emotions are linked to distinctive facial display, across all cultures.

Participants: (94) male and (103) female New Zealander students at the University of Canterbury, aged 18-22, contributed in these studies as interviewers and subjects. All were unpaid volunteers.

Stimuli

One of the major problems in the study of emotion is how to produce emotions in subjects in the laboratory, particularly a given single emotion. Some pessimistic researchers (e.g. Polivy, 1981) claim that it is impossible to elicit a single emotion in the laboratory; in contrast there are some others (e.g. Philippot, 1993) who, more optimistically, believe that some emotions are easier to elicit than others by using stimuli in the laboratory. However, a review of the literature shows that evidence on the study of discrete emotions which had been aroused in subjects by stimuli in the laboratory is very rare. It is obvious that producing blends of emotions in subjects is more common than producing a pure single emotion.

In the present studies, after the evaluation of different types of stimuli (including slides, interaction with trained confederates, hypnosis, repeating phrases, facial muscle movements, imagery, music, painting, and film) film was selected, as it is more dynamic than static, is practical and easy to use, and also can arouse the target emotions in subjects naturally. Subjects can watch films in the experimental room in the same way that they watch movies in everyday life.

A large number of short film clips were selected from documentary films and commercial movies in order to arouse six basic emotions (sadness, disgust, fear, anger, surprise, happiness) and a neutral state. In a prior experiment,

30 people from the same subject pool watched these film clips, and then reported their emotional reactions to the films, along with a rating of overall intensity of aroused emotion on 10 point scale, ranging from 0, "no intensity at all", to 10, "very strongly" (see Appendix 1). The attempt was to show these film segments to people who were in the neutral state; some individuals who reported on arrival having a positive or negative mood were rejected. Research has shown (e.g. Niedenthal and Kitayama,1994), that positive and negative mood states should influence the impression formed of the films. For example, Hansen (1992) found that subjects who were happy did not identify negative traits of the stimuli, while those subjects who had negative feelings failed to recognized positive traits of stimuli to which they had been exposed.

It was not difficult to find film segments to arouse sadness, disgust, and no emotion (neutral state) in subjects. Happiness was somewhat more difficult to arouse, and surprise slightly more so. Fear and especially anger, however, were very difficult to arouse via film segments. In general anger co-occurred with other negative emotions. Consequently the part of the present investigation that was supposed to arouse pure anger in subjects was ignored

The film segments selected for the experiment had aroused the target emotions in at least 27 of the 30 people who watched the film clips in the prior experiment.

Although the film segments were carefully selected to arouse only the target emotion, it was possible that at some point during the viewing the subjects might have blends of emotions, or perhaps other emotions. The solution to

this problem was that subjects were asked to report their emotions, with ratings of intensity, at three points (beginning, middle, and end) during film viewing, as well as during conversation with their partners, and if they reported blends of emotions, or emotions other than the target emotion, then their responses for that film segment were not considered in the data. This appears to be novel in the literature. Researchers who took no such precaution cannot legitimately be certain that the stimuli aroused the target emotions (and only the target emotions) during the entire experiment. Among many studies, only some (e.g. Harper, Wiens, Matarazzo, 1979) attempted to ascertain that the selected stimuli aroused the target emotions at all.

In selecting the films, special attention was given to eliminating the segments that did not have comparable emotional impact on females and males. In addition, the differences in intensity of the target emotions were not significant in the film segments chosen for the experiment.

Measures

Self report is the most common method used in studies on subjective emotional experience. It is obvious that measuring the subjective experience of emotion is different from measuring the other two components (behavioral and physiological) of emotion, as the experience is filtered through the consciousness. As mentioned earlier, some researchers (e.g. Nisbett and Wilson, 1977) claim that people may not have access to some of their mental processes. The study of Rosenberge and Ekman (1994) shows that this may be true for low-intensity emotion, whereas they found that with sufficient intensity there was coherence between facial expression and self report of

emotion, not only in the type of emotion, but also in time (at a specific moment). Furthermore Ekman, Friesen and Ancoli (1980) claimed that there is some coherence between self-reported emotional intensity, and the intensity of facial expression. Riggo, Widaman, and Friedman (1985), after using self report in their study, concluded that self-reported measurements have some validity for evaluating certain nonverbal skills.

Some evidence regarding the awareness of expression shows that in general people are not aware of their expressions. It seems that in these studies, one's awareness of one's expression is usually estimated by the correlation between one's perception of one's expression and the judgement of the observed expression by others. Clearly the obtained correlation between two variables is not significant when they are not measured by the same method. One can not say, for sure, that the measure of perceived expression of an emotion by others and the measure of one's perception of one's own expression are equal. Furthermore, it is not easy to determine whether observers decoded poorly or expressers encoded poorly; in other words, who was correct? Also it may be that one's awareness of one's inner feelings is different from one's awareness of one's outward expression.

All of the data in the present studies were compiled from the subjects' self report on free format questionnaires. The experiments were video taped secretly, but the tapes were not analyzed; they were only used to eliminate the responses of those subjects who did not follow the instruction carefully.

"Demand characteristics", the limitation of many studies using self report, were not problematic in the present study as subjects did not know what type of emotion they were expected to answer. Also subjects were free to choose

what emotion to report, and were not asked about particular emotions on the questionnaire.

As mentioned earlier, subjects were asked to report their emotions at three times: at the beginning, in the middle, and at the end of viewing films; as well as during conversation with their partner. This was because of a concern that the target emotion might be experienced simultaneously with other emotions (blends) at times during the viewing of even carefully selected films.

In short, clearly not all types of self report measure are equally significant; in this study it was attempted to eliminate the majority of the limitations of the previous studies which used self report measure.

Procedure

In all of the studies, for each session two students of the same sex were invited to participate in the experiment: one, the subject, to view the emotional film clips, and the other, the interviewer, to observe the subject's emotional response. After being welcomed to the laboratory, participants had five minutes time for free communication with their partner, and then separate instructions were given to them. The instructions were different for each partner. Special care was taken to ensure that the instructions were clear to the participants, and in every session the experiment did not proceed until it was certain that there was no misunderstanding. Before the experiment, subjects were blind to the type of emotion that the film clips were intended to evoke in them. Also they did not know which type of report the experimenter expected them to give in the questionnaire which they were

required to complete for each session. They were asked to fill in the questionnaire honestly and precisely and report whatever they felt.

During the experiments, the interviewers sat with their backs to the television screen, listening to a radio through headphones, so as to be unable to see or hear the film segments. The interviewers were instructed to ask the subjects three questions from a list of five suggested questions (Appendix 2) within limits. Interviewers were permitted to change the questions in their own way with respect to order of presentation and precise wording. They were instructed (see Appendix 3) to encourage subjects to talk about the story of the film after each segment, and in particular, to ask about the kinds of feelings that the subjects experienced during the film and during talking to the interviewers. Also, they were asked to report the kinds of feelings that the subjects experienced at the beginning, in the middle, at the end of watching the film, and during conversation (see Appendix 4). Participants were asked to limit their conversation to approximately 2-2.20 minutes.

An effort was made to arrange the experimental room like a normal sitting room. A coffee table and three comfortable chairs were in the middle of the room, and some recent editions of weekly magazines, as well as chocolate, biscuits, tea and coffee were on the table. A radio/cassette deck was in one corner of the room. Also some paintings were hanging on the walls, and some plants were placed around the room.

First Study

This study was designed to investigate the effects of suppression of the expression of sadness and happiness on the changes of intensity of emotions and subjective emotional experience during both silent and conversational interactions. Also, in additional analyses, the degree of subjects' success in hiding emotion and observers' judgement about felt emotion were considered.

The intensity of emotion was selected for study because the findings of empirical studies on emotion are not complete, or fully accurate, without attention to how intensely subjects experience emotions. Furthermore, it is possible that in the previous studies, some of the conditions in which subjects have been required to suppress their emotional expression may not have been deceptive; note that in the present experiments subjects sometimes reported no success at disguising their emotions, saying they expressed their true feelings. Surprisingly, these two important issues have been largely neglected in the literature.

Another issue considered in the present study is under which conditions subjects were aware of what they appeared to be expressing, that is, the association between subjects' report of their success in concealing their emotion and recognition of subjects' emotions by observers.

Finally, the impact of concealing the expression of sadness and happiness on the felt emotion in different contexts is interesting and worthwhile to study. The results presented here may suggest some explanation for the

inconsistencies in the literature by demonstrating in which experimental conditions which theories are valid.

Method

Participants: 41 females and 22 males were selected from the volunteer undergraduate list, available in the Psychology Department.

Stimuli: Eleven segments of videotape film clips with a length of 2-2.20 minutes were selected for their ability to elicit sadness (five segments), a neutral emotional state (one segment), and happiness (five segments). The first four sadness film clips depicted: a sad man crying beside a dying loved one; an old woman with a very sad expression describing the events that happened to her family during Vietnam war; a man talking about his memory of the Vietnam war; a funeral; and the fifth was about an actual disaster of a few years ago; in this segment a man described his experience of seeing it unfold. In the neutral segment some children were talking about their future. And the happiness films depicted: cartoon (1); a dolphin playing on the water; a little girl playing and dancing with her grandfather; and a group of happy people singing a happy song, with happy faces; cartoon (2).

Procedure: Participants were given some elementary information about the type of procedure it was to be, before taking part in the experiment. The information was given to them by telephone, at the same time that they were invited to participate in the experiment. For example they knew that two students, from the same sex and age group, would contribute in the experiment. One student would view a series of short film clips while the other student would listen to the music through headphones. In particular, they were informed that, although they may find some of the film clips

unpleasant, and the duration of the experiment would be 2-2.5 hours, the overall experiment would be interesting.

After arrival in the experimental room, the experimenter asked participants to introduce themselves and explain the reason why they were interested in doing this experiment. Next, the experimenter explained to the participants that the task they would be performing in this experiment would not be easy. It was emphasized to them that they follow the instructions carefully and accurately otherwise the results would be nonsensical. They were also informed that one of them would watch a total of eleven segments of film clips, each being 2-2.5 minutes in duration, while the other one would simultaneously listen to the radio through headphones, for the same duration of each film clip.

The person who watches the video would not hear the radio and vice versa, until the session was completed. When the session was completed the person, who did not watch the video throughout the experiment, could then see the video if he/ she was interested. The person who watched the film was instructed to stop the video, after each clip, and describe the film to the other person. The person who did not watch the film was instructed to ask him/her a few questions. The duration of the communication should be limited to approximately 2-5 minutes. Next each participant had to fill in a questionnaire separately and privately. Then the experimenter put two pieces of folded paper on the table and asked the participants to select one. On one of the pieces was written television and on the other radio, thus the participants were assigned to task.

After confirming that each person was happy with his/her task, the experimenter asked one of the participants to leave the experimental room and go to another room. A different set of instructions (see Appendices 3 and 5) and questionnaires (see Appendices 4, 6 and 7) were given to each participant. Again they were told to read the instructions carefully. Then the experimenter did not communicate with the participants for ten minutes, and then asked each of them to describe his/her task. Once the participants and the experimenter were satisfied that each participant understood the procedures, she asked the person who left the experimental room previously to return to the experimental room.

The person who watched the video *,the subject*, sat at a coffee table facing a 19 inch colour television while the person who listened to the music, *the interviewer*, sat facing the subject, so he/she was unable to see or hear the film segments. A pen and six questionnaires, placed face down, with a white piece of paper on top were positioned on the corner of the coffee table in front of the subject. The questionnaires were in two colours, three were red and three were black. The reason for the different colour, was to show the subject for which film clip he/she should express his/her feeling frankly and for which film clip he/she should express a neutral state. The order of the red questionnaire (honest response) and black questionnaire (concealed expression) was: red, black, black, red, black, red. The black questionnaire (see appendix 7) contained more questions than the red questionnaire (see appendix 6), because the subject had to report the degree of his/her success in concealing the expression of his/her feeling.

The subject knew that there were six questionnaires, that they were either red or black, but he/she did not know how many of them were red or black.

Also, he/she was not aware about the order of the colour, but knew the contents of the questionnaire because he/she had already seen the samples of questionnaires along with the instructions about completing them.

The interviewer also received a different questionnaire (see appendix 4) from the subject and a list of the questions that he/she should ask the subject. The interviewer should report the subject's emotion along with a rating of the intensity of emotion on a scale of 0-10 after each film segment.

The experimenter left the experimental room after she confirmed that everything was as it should be, and did not return until the end of sixth film segment. The experimenter was following the procedure of the experiment through a video monitor, in another room. Two video cameras were used for recording the subjects' facial expression and their body movement, one on the bookcase behind the books (for recording facial expression) and another one behind the one way mirror in room next to the experimental room.

The subject was instructed (see appendix 5) to look at the colour of the questionnaire before turning the television on. If the colour of the questionnaire was red he/she should express his/her feelings frankly, either during the film or in the talking period to his/her partner. If the colour was black he/she should conceal the expression of his/her feeling, pretending to have no feeling at all.

The subject was told to look at only one questionnaire at a time before each film. Then, turn the television on and watch only one film segment, turn the television off, promptly describe the film to the interviewer and answer his/her questions. Next the subject should fill in the questionnaire, for each film segment separately. In each questionnaire the subject should report the

type of emotion; along with the intensity of the emotion on a scale from 0 'not the slightest bit' of emotion to 10 'very strongly'; for three parts: at the beginning, in the middle and at the end, while either viewing the film or during conversation with his/her partner.

The interviewer should fill in the questionnaire for each film segment separately, simultaneously with the subject. He/she should report the subject's feeling along with a scaled intensity of emotion from 0 'not at all' to 10 'very strongly' for three parts: beginning, middle, end, while either subject was viewing film or during conversation.

The participants had a short break (2 minutes approximately) after each questionnaire and then they would start the next film clip. Each film clip was separated from the next by a short gap and it was easy for the subject to recognise the end of each segment. The first five film clips had been selected for their ability to elicit sadness. And the sixth film segment was a neutral film and it had been chosen to alleviate any unpleasant effects of the first five film clips.

After the sixth film clip, participants had a 15 minute break to have coffee/tea, then the experimenter put five more questionnaires (two red and three black) in front of the subject, on the corner of the coffee table, facing downwards. The order of the questionnaire was black, red, black, black, red with the white piece of paper placed on top of them. The experimenter did not communicate with the participant until the end of the experiment, but she was observing the procedure of the experiment from the video monitor in another room.

The procedure of this part was similar to the first part except that the film clips, that were used as stimuli, were selected for their ability to evoke happiness instead of sadness.

The reason for selecting these emotions (sadness in the first part and happiness in the second) was that, as mentioned earlier, there is some agreement that the states of these emotions are linked to distinctive facial expressions across all cultures.

Again the subject should look at the colour of the first questionnaire before turning the television on and watch only one segment of the film then turn the television off and describe the film immediately, to his/her partner. Also he/she should answer the interviewer's questions then fill in a separate questionnaire for each film clip.

The interviewer should listen to the radio through the headphones while the subject is viewing the film. After the film he/she was instructed to encourage the subject to describe the film promptly and then ask him/her three questions and report the subject's emotion along with the intensity for each film segment.

After the last film segment the experimenter arrived in the experimental room and told the subject if he/she could not remember his/her feeling in some part of the film, he/she can then go back through that segment again and complete the questionnaire. The experimenter asked the participants to describe their task to their partner and then asked them if they were aware that the procedure of the experiment had been videotaped. Not one participant guessed that they had been videotaped.

The experimenter asked the participants' permission for using the videotape for scientific purposes. They were told that if they did not want their tape analysed, the tape will be destroyed in front them at the same time. No one denied permission for the use of their video tape. Finally the participants were asked not to discuss the experiment with other students.

The data from two males and one female (subjects) were not considered in the analysis, because they did not follow the instructions carefully. In this study each subject contributed to all parts of the experiment.

The independent variables determined in this study were: the period of silence during watching the film, talking promptly after the film, the sex of subjects, and the emotion (sadness or happiness). The intensity of emotion, the degree of subjects' success in suppression of their feelings, the interviewers' judgement of subjects' emotions, and the subjects' emotional experience are considered as dependent variables.

Results

The primary purpose of this study was to compare the changes of felt intensity of emotion in deceptive responses with those in honest responses, for sadness and happiness, during silence or talking. A paired comparison *t* test was used for this analysis. In general (where we combine the data for silence and talking, and during sad and happy films), there was no significant difference between the mean intensity during honest responses and deceptive responses. However, when the data were analysed separately for different conditions, some differences appeared. In the condition of silently watching a happy film, the subjects' mean intensity of emotion during suppression of happiness was greater than that during frank expression of their feelings, for females and males combined. But in fact it seems that this significant result is related only to females when the data are categorised by sex and analysed separately. Further, in the period of conversation about the sad films, the intensity of emotion in honest responses was greater than in deceptive responses, but the significant result obtained only for males (see Table 1)

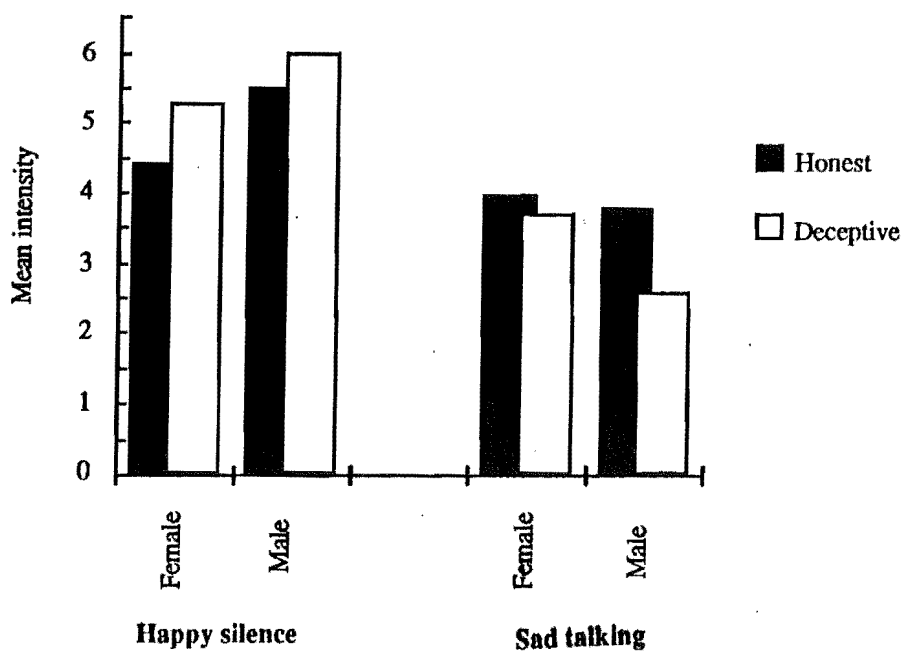
emotion	gender	Silence		Talk		Silence & Talk.	
		honest Vs deceptive	mean	p	honest Vs deceptive	mean	p
sad	female	4.68 h 4.83 d	ns	3.98 h 3.69 d	ns	4.21 h 4.22 d	ns
	male	4.83 h 4.24 d	ns	3.69 h 2.51 d	*	4.11 h 3.46 d	ns
	totals f & m	4.73 h 4.62 d	ns	3.67 h 3.36 d	.1	4.18 h 3.96 d	ns
happy	female	4.42 h 5.28 d	*	4.11 h 4.15 d	ns	4.37 h 4.67 d	ns
	male	5.49 h 5.93 d	ns	4.83 h 4.63 d	ns	5.16 h 5.29 d	ns
	totals f & m	4.81 h 5.54 d	*	4.37 h 4.31 d	ns	4.65 h 4.88 d	ns
sad+ happy	female	4.65 h 5.03 d	ns	3.95 h 3.94 d	ns	4.29 h 4.47 d	ns
	male	5.2 h 5.19 d	ns	4.20 h 3.79 d	ns	4.69 h 4.49 d	ns
	totals f & m	4.84 h 5.09 d	ns	4.04 h 3.88 d	ns	4.43 h 4.48 d	ns

Table 1. comparison between emotional intensity in honest and deceptive responses.

Note: h= honest, d= deceptive and * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$; see Table 1 in Appendix for more detail).

However, there was no difference during conversation between the honest and the deceptive happy conditions. And during the sad film, in the silent condition, the mean intensity of the honest response was nearly equal to that of the deceptive response. This contrast between sadness and happiness is interesting and needs more study. (see Figure 1)

Figure1. Comparison between emotional intensity in honest and deceptive responses.



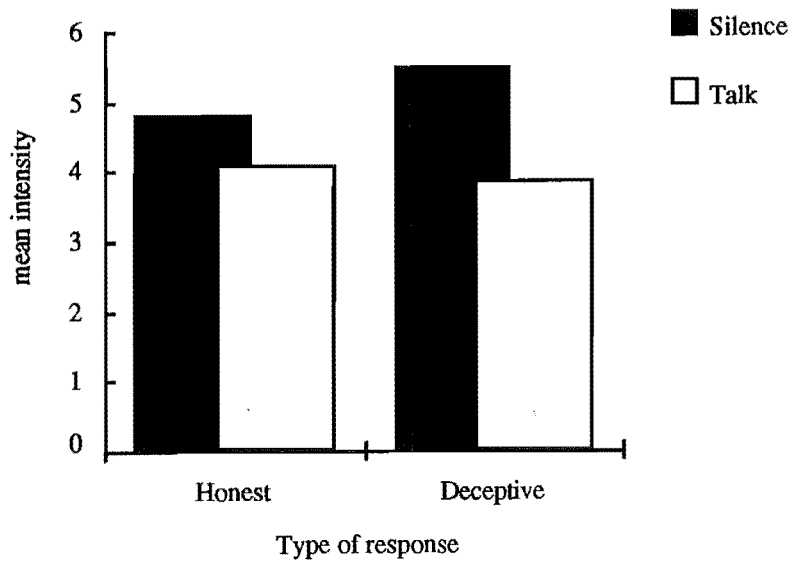
response	gender	happy		sad		totals (sad & happy)	
		silence	Vs talk	silence	Vs talk	silence	Vs talk
		mean	p	mean	p	mean	p
honest	male	5.49 s 4.83 t	0.09	4.83 s 3.48 t	*	5.2 s 4.2 t	**
	female	4.62 s 4.11 t	0.1	4.69 s 3.77 t	**	4.65 s 3.95 t	**
	totals	4.93 s 4.37 t	*	4.73 s 3.67 t	***	4.84 s 4.04 t	***
deceptive	male	5.93 s 4.63 t	**	4.24 s 2.69 t	**	5.19 s 3.77 t	***
	female	5.18 s 4.15 t	**	4.83 s 3.69 t	**	5.03 s 3.94 t	***
	totals	4.93 s 4.37 t	*	4.73 s 3.67 t	***	5.09 s 3.88 t	***
honest+ deceptive	male	5.72 s 4.73 t	***	4.52 s 3.10 t	***	5.20 s 3.99 t	***
	female	4.91 s 4.13 t	***	4.75 s 3.73 t	***	4.84 s 3.95 t	***
	totals	5.19 s 4.34 t	***	4.67 s 3.52 t	***	4.97 s 3.98 t	***

Table 2. comparison between emotional intensity in silent and talking periods.

Note: s = silence, t = talking and * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$.
(see Table 2 in Appendix for details).

In further analysis, the silent condition was compared with the conversation period, with regard to the intensity of emotion. As the Table 2 shows in all conditions of the experiment the subjects' intensity of emotion during silence was greater than during conversation. The significant results obtained in every condition of the experiment, except in the condition of honest response during happy film when the data were analysed for females and males separately. (see figure 2).

Figure 2. a comparison between mean intensity during silence and talking periods, for honest and deceptive conditions.



Gender differences were also examined, the findings showing that the rate of change of intensity of emotion was different between females and males (see Table 3).

duration	emotion	honest		deceptive		totals	
		male Vs female	p	male Vs female	p	male Vs female	p
silence	sad	4.68 f 4.83 m	ns	4.83 f 4.24 m	ns	4.75 f 4.52 m	ns
	happy	4.62 f 5.49 m	*	5.18 f 5.98 m	*	4.91 f 5.72 m	**
	totals	4.65 f 5.20 m	*	5.03 f 5.19 m	ns	4.84 f 5.20 m	ns
Talk	sad	3.78 f 3.48 m	ns	3.69 f 2.69 m	*	3.73 f 3.10 m	*
	happy	4.11 f 4.83 m	*	4.15 f 4.63 m	ns	4.13 f 4.73 m	*
	totals	3.95 f 4.2 m	ns	3.94 f 3.77 m	ns	3.95 f 3.99 m	ns
silence+ Talk	sad	4.21 f 4.11 m	ns	4.22 f 3.47 m	*	4.21 f 3.79 m	ns
	happy	4.37 f 5.16 m	**	4.67 f 5.29 m	*	4.52 f 5.22 m	***
	totals	4.29 f 4.69 m	ns	4.47 f 4.45 m	ns	4.39 f 4.62 m	ns

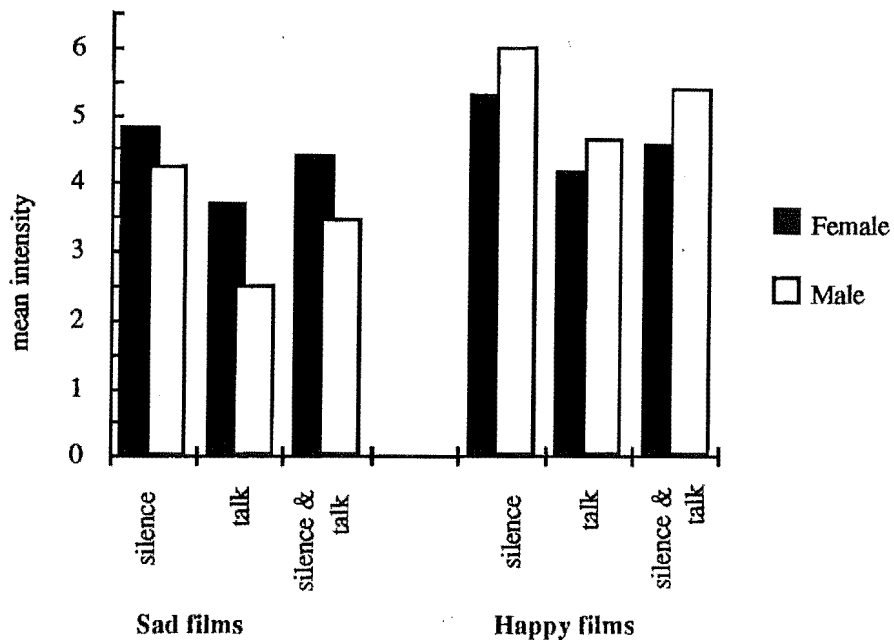
Table 3. Comparison between emotional intensity for males and females.

Note: f = females, m = males and * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$ (see Table 3 in Appendix for details)

The males' happiness intensity, in general, was greater than females' mean intensity except during the combination of talking and attempting to conceal happiness (deceptive).

For sadness, during the silent condition, in neither honest nor deceptive conditions was there a significant difference between males and females. However, during conversation the females' mean intensity was greater than the males' mean intensity. This difference was strong in the deceptive conversation but was not significant during the honest conversation (see Figure 3).

Figure 3. showing a comparison between females' mean intensity with males' during silence and talking, for sad and happy films.



Furthermore the results, on the comparison between sad and happy films, revealed that males' happiness intensity during talking; either in honest or deceptive responses, and in deceptive condition in silent periods was greater

than their sadness intensity. In contrast no significant difference between the intensity of sadness and happiness was found for females (Table 4).

duration	gender	honest		deceptive		totals	
		sad Vs happy	p	sad Vs happy	p	sad Vs happy	p
		mean		mean		mean	
silence	female	4.68 s 4.62 h	ns	4.83 s 5.20 h	ns	4.75 s 4.92 h	ns
	male	4.83 s 5.49 h	ns	4.24 s 6.03 h	***	4.52 s 5.76 h	***
	totals f & m	4.73 s 4.81 h	ns	4.62 s 5.49 h	**	4.67 s 5.21 h	**
Talk	female	3.77 s 4.11 h	ns	3.69 s 4.19 h	ns	3.73 s 4.15 h	ns
	male	3.48 s 4.83 h	*	2.69 s 4.8 h	***	3.1 s 4.82 h	***
	totals f & m	3.67 s 4.37 h	*	3.36 s 4.39 h	***	3.52 s 4.38 h	***
silence+ Talk	female	4.21 s 4.37 h	ns	4.22 s 4.69 h	ns	4.21 s 4.53 h	ns
	male	4.11 s 5.16 h	**	3.46 s 5.4 h	***	3.79 s 5.3 h	***
	totals f & m	4.18 s 4.65 h	*	3.96 s 4.94 h	***	4.07 s 4.8 h	***

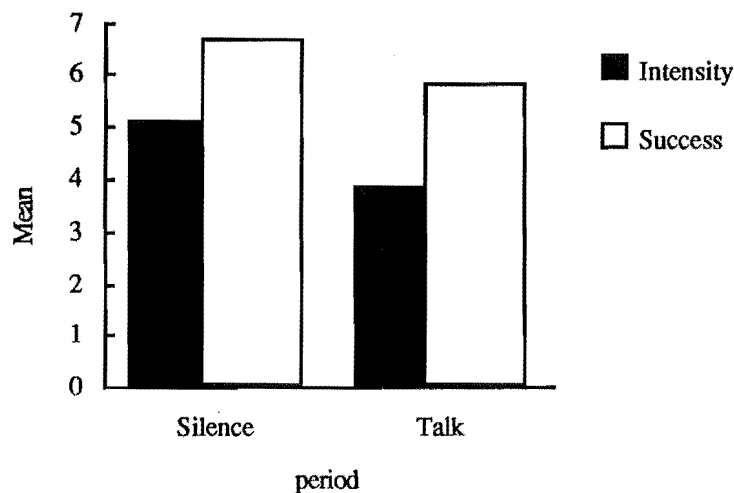
Table 4. Comparison between emotional intensity for sad and happy stimuli.

Note: s = sad films, h = happy films and * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$ (see Table 4 in appendix for details)

Further analyses were conducted on the degree of subjects' report of their success in hiding emotion. Subjects reported themselves to be more successful in hiding their emotions when they were in the silent condition than when they were in the conversation condition ($p = .01$), even though, as

Figure 4 shows, the mean intensity of felt emotion in the silent condition was greater than in the conversation condition.

Figure4. a comparison between emotional intensity and Ss' success, in suppression of their emotion, for silence and talking.



Moreover, the difference between the degree of subjects' reports of their success in hiding sadness and happiness was also considered. Although, throughout the experiment (film & conversation) subjects reported greater success in hiding sadness than happiness, this difference was not significant ($p=.1$). However, the mean success in hiding sadness was significantly greater than that of hiding happiness during conversation ($.05$). When females experienced happiness in general (combining silence and talking), they reported they were more successful in hiding it than men ($p=.05$). This difference holds only during conversation ($p=.02$). Although the intensity of sadness was greater in some conditions for females than for males (see figure

3), the degree of females' and males' success in hiding their feelings was similar.

Further analysis was made of the association between the intensity of emotion, subjects' success in suppressing their happiness or sadness, and the perception of subjects' emotion by interviewer (the judgements were based on the observation of the subjects' response to the stimuli, in addition asking three questions about films and subjects' feeling by interviewers). Results revealed that, in all conditions of the experiment, there was no relation between the intensity of emotion and the judgement about emotion for females, and for males the relation differed for happiness and sadness.

During conversations involving happiness, in both the honest and deceptive conditions, there were significant relationships (negative in honest, $P=.02$ & positive in deceptive, $P=.02$), between these two variables. And during the sad films, in the silent deceptive condition, there was a negative relationship between intensity and judgement ($P=.04$). Furthermore there was a negative relationship between intensity and the degree of success in hiding emotions during conversation (sad & happy) for males ($P=.009$) and a surprising positive relationship for females in the silent sadness condition ($P=.05$) see table 5.

The most interesting finding concerned the relationship between the subjects' report of their success in hiding emotions, and the observed emotion, there being no significant relationship for females, and a very strong negative relationship in happiness for males (for silence, $P=.0001$; for conversation, $p=.0009$).

Emotion	Gender	intensity vs success deceptive				intensity vs judgment deceptive				success vs judgment deceptive				intensity vs judgment honest			
		silent		convers..		silent		convers..		silent		convers..		silent		convers..	
		R	p	R	p	R	p	R	p	R	p	R	p	R	p	R	p
Happy	female	.13	ns	-.07	ns	.15	ns	.02	ns	.16	ns	.1	ns	-.12	ns	-.21	ns
	male	-.3	ns	-.23	ns	.19	ns	.40	+ *	-.63	-***	-.57	-***	-.20	ns	-.41	-*
	totals	.04	ns	-.14	ns	.21	ns	.15	ns	-.42	-***	-.29	-**	-.09	ns	-.27	-*
Sad	female	.30	+ *	.08	ns	.10	ns	-.1	ns	-.11	ns	-.05	ns	.7	ns	.10	ns
	male	.24	ns	-.22	ns	-.4	-*	-.25	ns	-.15	ns	.07	ns	.34	ns	.15	ns
	totals	.26	+ *	-.02	ns	-.16	ns	-.16	ns	-.08	ns	.01	ns	.16	ns	.19	ns
Sad & Happy	female	.19	+ *	-.01	ns	.12	ns	-.01	ns	-.13	ns	-.08	ns	.10	ns	.10	ns
	male	-.12	ns	-.35	-**	.2	ns	.16	ns	-.39	-**	-.34	-**	.15	ns	.15	ns
	totals	.05	ns	-.12	ns	.01	ns	.05	ns	-.26	-***	-.19	-**	.08	ns	.12	ns

Table 5. showing the correlation between intensity and success; intensity and judgment; and success and judgment.

* = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$.

Finally the effects of concealment of emotion on subjective emotional experience were considered and X^2 test was used for this analysis. Although subjects in general (regardless of whether they were silent, talking; male or female) experienced a neutral state when they suppressed the expression of sadness or happiness, the effects of suppression were different under different conditions of the experiment (Table 6).

Emotion	Gender	Silence		Talking	
		X ²	P	X ²	P
Sad	female	.66	.5	.08	.9
	male	9.42	.004*	.14	.85
	female & male	2.03	.2	.21	.73
Happy	female	3.01	.1	6.1	.02*
	male	.24	.8	.25	.7
	female & male	2.83	.12	5.21	.03*
Happy & Sad	female	.57	.53	3.89	.04*
	male	6.58	.01*	.47	.58
	female & male	4.79	.03*	3.85	.05*

Table 6. The comparison between honest and deceptive responses, regarding the effects of expression on feeling.

There were no significant differences between the expression and suppression of happiness for males, this result holding for both the conditions of silence and talking separately. A similar effect occurred during sad films for females. Males experienced a neutral state when they suppressed their sadness in the silent condition (Figure 5), and females felt a neutral state when they hid their happiness during talking (Figure 6).

Figure 5. a comparison between the frequency with which Ss experienced a neutral state during honest and suppression of expression, in SILENCE.

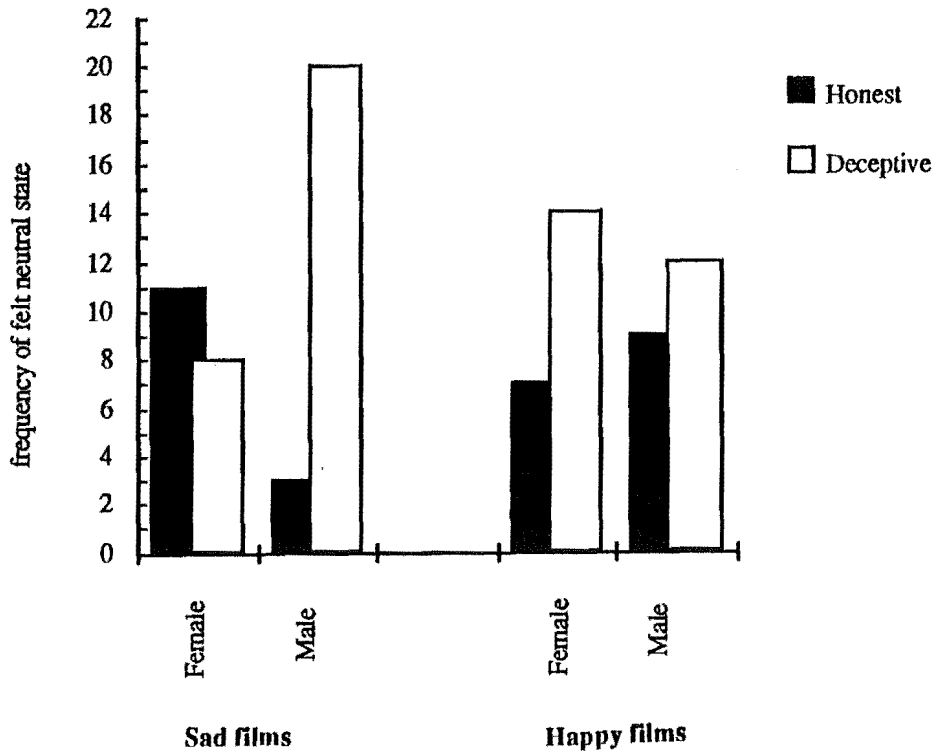
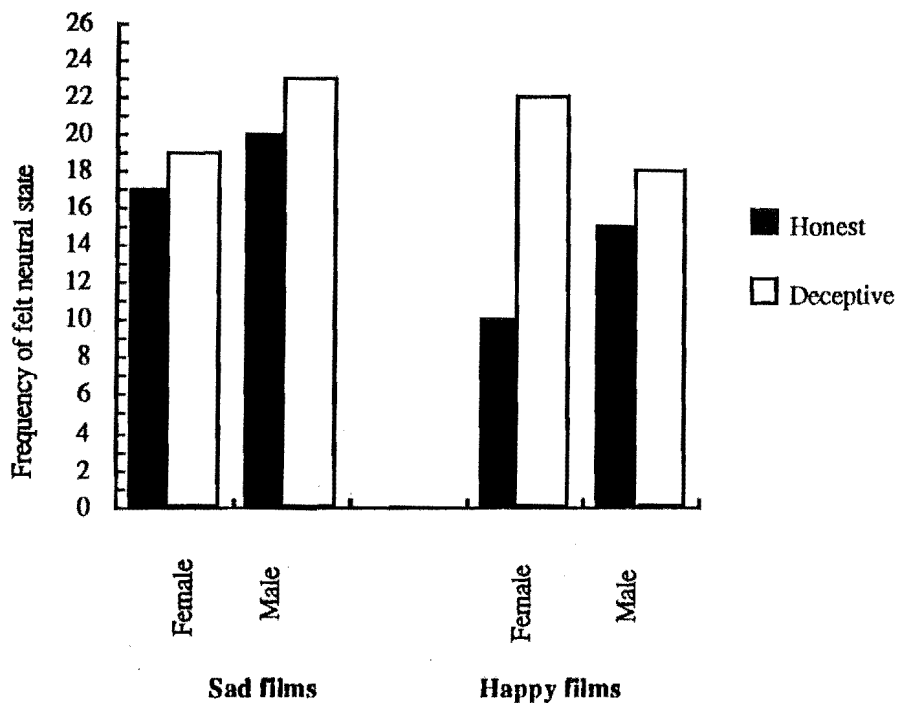


Figure 6. a comparison between the frequency with which Ss experienced a neutral state during honest and suppression of expression, in the period of TALKING.



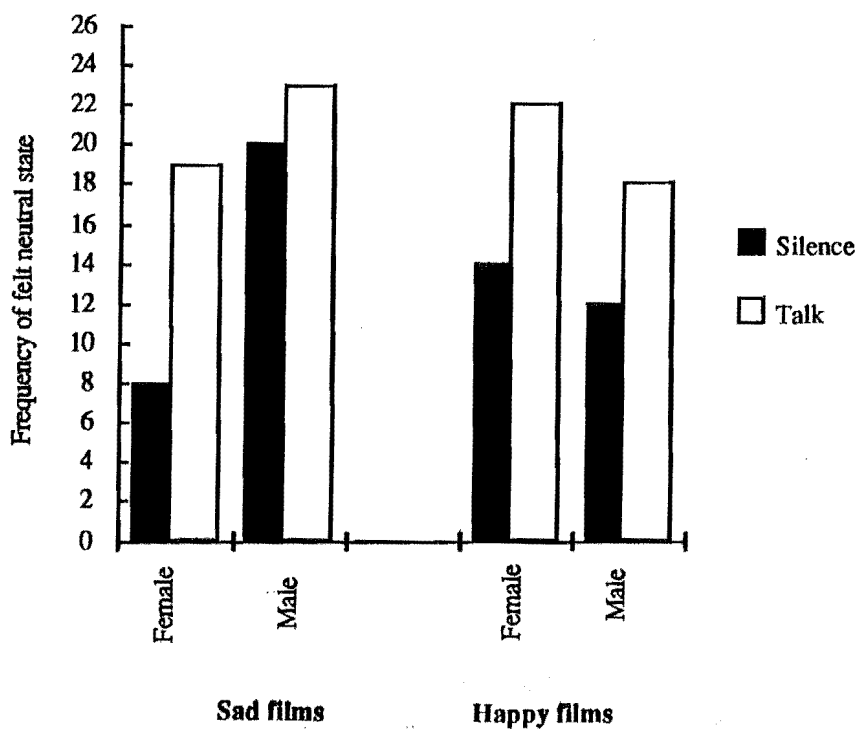
Females and males were also compared in the different conditions of the experiment, with respect to the effects of suppression of happiness or sadness, during silence or talking. The X^2 test was used for this analysis. The only significant result found in sad films during silence is that males experienced more neutrality than females when concealing their sadness in silence (see Table 7)

Emotion	Period	X ²	P
Sad	Silence	6.03	.02*
	Talking	.42	.6
	Silence & talk	4.15	.05*
Happy	Silence	.16	.8
	Talking	.57	.5
	Silence & talk	.73	.4

Table 7. The comparison between males and females, regarding the effects of expression on feeling.

Furthermore, in comparison between silent and talking periods for different conditions separately, it was found that subjects experienced a neutral state more during talking than during silence, when concealing the expression of sadness or happiness (Figure 7). But it seems this significant result held only for females, when the data are analysed separately (Table 8).

Figure 7. a comparison between the frequency with which Ss experienced a neutral state, while suppressed the expression, during silence and talking.



Emotion	Gender	X ²	P
Sad	female	6.5	.01*
	male	.16	.7
	female & male	4.4	.04*
Happy	female	3.48	.05*
	male	1	.3
	female & male	4.49	.04*
Sad & Happy	female & male	8.9	.003*

Table 8. Showing the comparison between silence and talking, regarding the effects of expression on feeling.

Discussion

The present results indicate that the changes of intensity that were found may depend on the experimental conditions. Perhaps it is not possible to generalize about increases or decreases in emotional intensity during the expression or suppression of emotions. For example, during silence and watching films, the intensity of females' happiness in deception was greater than in honest responses. While, during conversation about sad films, males' intensity of sadness in honest responses was greater than in the deceptive case. Still during neither conversation about happy films, nor watching sad films in silence, was there any significant difference between the mean intensity of honest and deceptive responses.

While, overall (where data involving sad and happy films and observed during silence and talking were all considered together) there was no difference between mean intensity in the honest and deceptive conditions, the rate of change during different periods of the procedure was different in the honest condition and the deceptive conditions.

Furthermore, neither gender nor the emotions of sadness or happiness affected the differences between silence and talking. In every condition of the experiment, the intensity during watching films, in either honest or deceptive responses, was greater than during talking. An interesting result was found in the differences between females and males regarding the effect of happy or sad stimuli. During happy films there were significant differences between females' intensity and males' intensity in every condition of the experiment,

except for deceptive conversation. While in sad films, with the exception of deceptive conversation, males' intensity was not significantly different from females'. However, males felt happiness with greater intensity than females in honest responses, either silent

or talking, and also while concealing their happiness in silence; and females' sadness was more intense than males' during deceptive conversation.

Many studies have shown gender differences in experiencing emotions, but there is not much evidence comparing intensity of emotion between genders in different contexts. The results of this study show that frequently males felt happiness with greater intensity than females, and in contrast females felt sadness with greater intensity than males' on some occasions. This finding, in part, supports the hypothesis that females experience more intense negative emotion than males (e.g., Eaton & Kessler, 1981). Also this is relevant to Wallbott's (1988) suggestion that female actors are better in expressing unfeigned sadness than males, although Fujita (1991) suggests that females experience both positive and negative emotions more intensely than males.

Also there is the possibility that, either hiding happiness during silence, by females, or concealing sadness in conversation, by males, was a special case. Because these conditions affected the intensity of emotion, the result was to increase females' emotional intensity while decreasing males'.

In further analysis, it was found that it may be easier to hide an emotion, either sadness or happiness, during silence, than during talking; even while viewing stimuli and feeling the emotion more intensely during silent viewing. A tentative finding, requiring more study for confirmation was subjects' tendency to have more success in hiding sadness than happiness. Although

the result was significant only during conversation, frequently the means of success in sadness were greater than happiness (non significantly). People may have more experience in hiding sadness than happiness, because it is more common to express happiness than sadness in everyday life.

Regarding the gender differences in hiding emotion, it seems that females had more success than males in hiding happiness during talking. For sadness, males and females reported a nearly equal degree of success in hiding their emotion, although females' sadness was more intense than males' during talking (significantly) and silence (non significantly).

A surprising result was the relationship between intensity of emotion and the degree of success in hiding sadness. Females thought that they had more success during silence in hiding more intense than less intense sadness. An unanticipated result was the correlation between degree of success in hiding emotion and the correct judgement. Under no conditions was there any relationship for females, but a strong significant negative correlation between these two measures was obtained for males in the case of happiness, both during silence or talking. The interpretation of this finding is complex. One of the most obvious possibilities is that males are more aware of their expression than females in some contexts. There is also the possibility that this effect arises from differences between females and males in decoding and encoding emotional messages; there is evidence showing that males and females differ in coding and decoding non-verbal communication. For example, Hall (1978, 1979, 1984) believed that women are usually better at decoding non-verbal communication than men, except that where the communication is deceptive, they lose their advantage. Moreover, as mentioned earlier, the correlation between one's perception of one's

expression and an observer's decoding of the same expression does not lead to a clear answer to who was correct and who was not.

However, it may be that the impact of suppression of sadness or happiness, during silence or talking, is different for males and females. Females felt a neutral state when concealing their happiness, during talking, whereas males felt a neutral state when they suppressed their sadness during silence. Also it seems that the difference between silence and talking is more obvious for females than males. There is a possibility that the feigning of a neutral state while experiencing sadness or happiness can influence subjective emotional experience, yielding to an experienced neutral state more often during talking than silence, for females.

Second Study

Although the comparison among emotions regarding the impact of expressing unfeared emotions on a true feeling of sadness is essential to the psychology of emotion, no research has examined this issue. The present study was mainly concerned with subjects' emotional experience in the process of substituting the expression of unfeared emotions (disgust, fear, anger, happiness, and a neutral state) for sadness. In further analysis the intensity of emotion and subjects' perception of their success in expressing target emotions were also considered. Separate data were collected during the silent watching of films and discussion afterward, in order to study the effect of context on emotional dissimulation.

Participants: Fifty students (twenty four females and twenty six males) from a variety of departments contributed as interviewers and subjects. They volunteered by adding their names to a list posted on a notice board on campus (see Appendix 8).

Stimuli: In this study the same five videotape segments were used to arouse sadness as in the first study.

Procedure: The procedure of the second study was similar to the first study, with the exception that subjects did not express their feeling frankly for any film clips. They were asked to disguise their expression throughout the process of the experiment. In other words the subjects were instructed to try to experience the emotion which the film intended to evoke, and also to maintain that emotional experience as much as possible. But they were also

asked to behave in such a way that their interviewers would believe they were experiencing another emotion (see Appendix 9).

The emotion that subjects should convey was written at the top of the questionnaire (see Appendix 7) that subjects should fill in for each film clip. This emotion was different for each film clip. Subjects were shown five sad film segments and asked to express the other five emotional states. The arrangement of requested emotion was not the same for every subject, so that the emotions of disgust, anger, fear, and happiness as well as the neutral state were counterbalanced. Therefore, the sadness induced by each film segment was substituted with a different requested emotion by different subjects.

Like the first study, the participants were placed in separate rooms and given a different set of instructions. There was no difference between the first and second study in the interviewer's instruction (see Appendix 3). However, the difference between subject' instruction was that, for each film clip the subject should express different emotion. The colour of all questionnaires was black.

In this study the subjects should look at the top of each questionnaire, instead of looking at the colour of the questionnaire, to find which emotion was requested before turning the television on.

During the experiment the subjects sat at the coffee table facing the television and interviewers sat opposite the subjects, so as to observe the subjects' expression. In this study, similar to the first study, the interviewers were listening to the radio through headphones, while subjects were watching film.

After each film clip interviewers should encourage the subjects to talk about the film and particularly their feelings. They were instructed to ask subjects

three questions from the list of five suggested questions, in their own words without changing the meaning of the questions. Then subjects and interviewers should fill in the questionnaire, separately but simultaneously after they finished their communication about each film segment. The questionnaires were the same as those used in the first study. Participants had a short break before starting the next film segment.

At the end of the fifth film clip the experimenter entered the experimental room and informed the participants that they had been videotaped and asked their permission for using these tapes for study. Then, a multiple choice questionnaire, regarding a comparison among different sections of the experiment, was given to the subjects. The analysis of these questionnaires is not reported in this dissertation.

The data from one female subject/interviewer pair were eliminated from the analysis because they did not follow the instructions.

Results

The aim of this study was to explore the differences among the impact of pretended disgust, fear, anger, happiness and a neutral state on a feeling of sadness, during silence and talking. The frequency with which subjects felt the expressed emotions, the degree of intensity of the felt emotions, and the degree of subjects' success in expressing the target emotions were considered as dependent measures. On the other hand, the periods of silence or talking, as well as the target emotions, were independent variables.

To determine whether some emotions were felt more or less than others when subjects were instructed to express them, the X^2 test was used. The data for this comparison were the frequency of the events which subjects felt the emotions that they expressed. The results of this analysis are summarized in Table 9. And Table 10 shows the results of the comparison between silence and talking, with respect to the effects of expressing the target emotions while feeling sad.

	Silence P	Talk P	Total P
Neutral vs Disgust	ns	*	ns
Neutral vs Fear	ns	**	**
Neutral vs Anger	ns	ns	ns
Neutral vs Happy	ns	ns	ns
Disgust vs Fear	.1	ns	.1
Disgust vs Anger	ns	**	*
Disgust vs Happy	.1	ns	ns
Fear vs Anger	.09	***	***
Fear vs Happy	ns	.1	ns
Anger vs Happy	.09	.1	*

Table 9. The significant levels, of the X^2 results, for the comparison shown in the left column, under conditions of “silence” or “talking” in addition of the total of conditions.

Note: * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$.
(see in Appendix Second Study, Table 9 .for more details).

Emotion	X ²	P
Neutral	10.31	.003**
Disgust	.15	.9
Fear	2.29	.2
Anger	9.34	.004**
Happy	10.3	.003**
Totals	26.02	.0001***

Table 10. X^2 results and corresponding significance levels for the comparison between silence and talking, regarding experiencing the expressed emotions.

A one way analysis of variance was used for further analysis of the differences between silence and talking, both in the degree of intensity of emotion and in subjects' success in expressing the requested emotions . In this analysis the factor was: time of rating (silence or talking). The scores that subjects reported, for the intensity of their emotions and the degree of their success in expression, were used as the data in this analysis. The results of this analysis are presented in Table 11.

Emotions	Conditions	Intensity		Success	
		Mean	P	Mean	P
Neutral	Silence	3.89		8.2	
	Talk	2.5		7.2	
Disgust	Silence	5.69		6.46	
	Talk	5.2		5.53	
Fear	Silence	4.33		4.17	.1
	Talk	3.93		6	
Anger	Silence	3.57		4.35	
	Talk	4.07		5.19	
Happy	Silence	2.83	*	5	
	Talk	4.71		6	
Totals	Silence	4.2		5.71	
	Talk	3.92		5.98	

Table 11. F test results and corresponding significant levels for comparison, between silence and talking periods in degree of intensity and Ss' perception of their success. (the events that Ss did not experience the expressed emotions are eliminated)

Note: * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$.
(see in Appendix Second Study, Table 11 for more details).

Neutrality: As can be seen from Table 9 and Figure 8, during the condition of watching films in silence, the tendency of expressing a neutral emotional state to cause a feeling of emotional neutrality did not differ from the tendency of expressing other target emotions to cause those same emotions to be felt. During talking periods, however, subjects experienced a neutral state when pretending to have a neutral state more often than they experienced either fear or disgust when feigning fear or disgust. Also, during talking, subjects experienced a neutral state more often than during silence (Table 10), but the differences between these two conditions, with respect to either the degree of intensity of emotion or subjects' report of their success, were negligible (see Figures 8, 9 and 10)

Figure 8. a comparison of the frequency with which Ss experienced the requested emotion for the silence and talking.

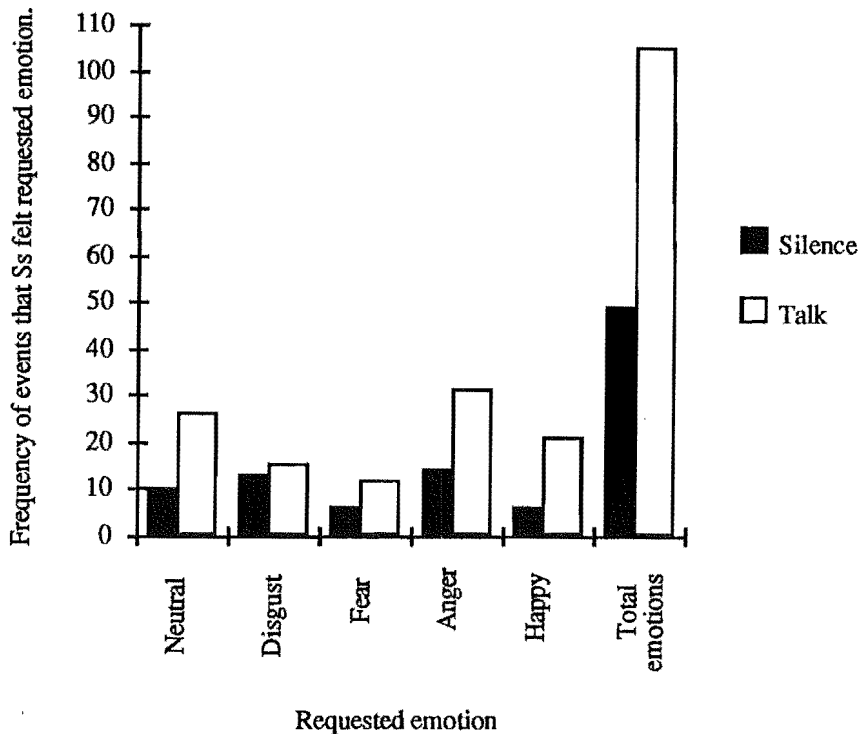


Figure 9. showing the mean intensity of each emotion which Ss experienced in expressing emotion during silence and talking.

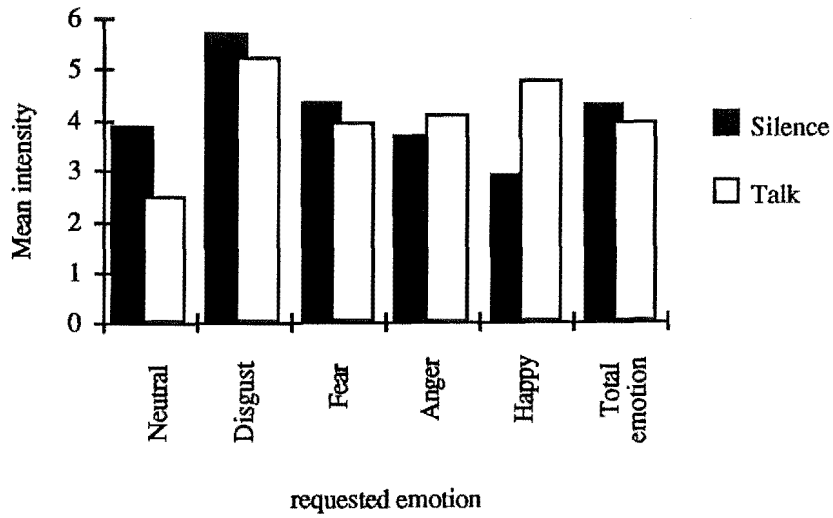
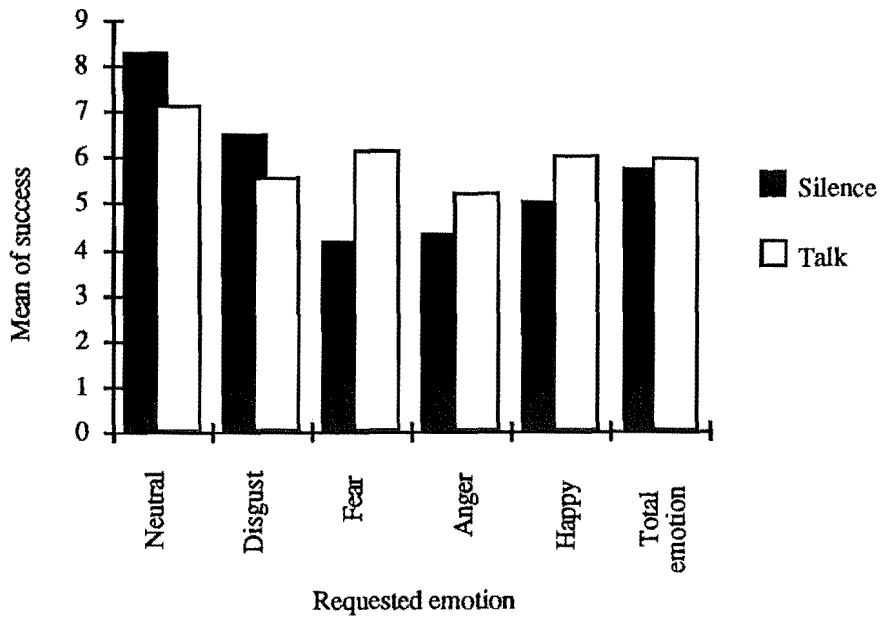


Figure 10 showing the mean of success in expressing requested emotion during silence and talking.



Disgust: The tendency of expressing disgust to cause a feeling of disgust during silence was as strong as the tendency of expressing anger or a neutral state to cause feelings of anger or neutrality. It is interesting that, during talking, these two emotions (anger and neutrality) were produced more often than disgust by subjects expressing them. Moreover, although during silent periods fear was produced less often than disgust, and happiness was produced more often than disgust, the differences were not significant ($P=.1$). During talking periods the tendency of expressing disgust to cause feelings of disgust did not differ from the tendency of expressing fear or happiness to cause feelings of the corresponding emotion. However, silent periods were not different from talking periods in either the tendency to feel disgust, intensity of emotion, or subjects' reports of their success in substituting disgust for sadness.

Fear: During the silent part of the experiment, the tendency of expressing fear while feeling sad to cause feelings of fear was the same as the tendency of expressing either happiness or neutrality to cause feelings of happiness or neutrality, respectively. And although fear was produced less often than anger ($P=.09$) or disgust ($P=.1$), the differences were not significant. During talking, fear was produced significantly less often than a neutral feeling or anger, but did not differ significantly in this regard from happiness or disgust (see Table 9). Furthermore, the silent condition did not differ from the talking condition in either the intensity of emotion or the tendency of expressing fear to cause feelings of fear (see Table 10), and the difference in the subjects' reported success in pretending the target emotions is trivial (see Table 11).

Anger: In the silent condition anger was produced nearly as often as neutrality and disgust, and more often than either fear ($P=.09$) or happiness

($P=.09$); these last two differences are too small to be significant statistically. During the talking period, the tendency of expressing anger to cause feelings of anger was as great as the tendency of expressing neutrality to cause a neutral feeling, while anger was produced significantly more often than fear and disgust, and more often than happiness, but not to a significant extent ($P=.1$). However, subjects experienced anger more often during talking than silence, whereas the intensity of emotion was nearly equal and the difference in subjects reported success was not significant.

Happiness: The tendency of expressing happiness to cause feelings of happiness during silence was equal to the corresponding tendency for neutrality and fear. Anger ($P=.09$) and disgust ($P=.1$) were produced in this way more often than happiness, but not significantly. During the talking parts of the experiment, subjects felt happy when expressing happiness as often as they felt neutral or disgusted when expressing neutrality and disgust, respectively. Fear ($P=.1$) and anger ($P=.1$) were more often felt while being expressed, but again the difference was not significant. It seems that the differences between happiness and each of the other emotions, during either silence or talking, are not significant. However, silence differed from talking in that subjects experienced more happiness, with greater intensity, during talking than silence. The difference between the degrees of subjects' success in silence and talking is trivial.

Total emotion: Subjects experienced the emotion which they were instructed to express more often during talking than silence (Figure 8), while the differences in the intensity of emotion or subjects report of their success is negligible (see Figures 9 & 10).

Additional analysis was conducted on the differences between silence and talking, with respect to the intensity of emotion and subjects' report of their success during the entire experiment (prior comparisons considered only whether subjects felt the emotions which they were instructed to express. The obtained results of this analysis are different from the analysis in which data obtained when subjects did not feel the expressed emotion were eliminated from consideration see Table 12.

Emotion	Condition	Intensity		Success	
		Mean	P	Mean	P
Neutral	Silence	4.88	***	6.17	ns
	Talk	3.36		6.10	
Disgust	Silence	4.29	.1	5.22	ns
	Talk	3.65		5.53	
Fear	Silence	4.25	.09	4.08	ns
	Talk	3.46		3.83	
Anger	Silence	4.35	*	4.5	ns
	Talk	3.53		4.7	
Happy	Silence	4.83	*	5.83	*
	Talk	3.74		4.83	
Totals	Silence	4.53	***	5.15	ns
	Talk	3.55		4.99	

Table 12. Means and corresponding significant levels, of the F test results, for comparison, between silence and talking periods in degree of intensity and Ss' perception of their success. (during intire of experiment)

Note: * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$. see in Appendix Second Study Table 12 for detail.

Discussion

The results of this experiment suggest that the tendency of expressing each target emotion to attenuate a feeling of sadness was different for each emotion, and also that watching films in silence differed from talking afterward in this regard. The differences among emotions are more pronounced during talking than silence, and thus more significant results were obtained concerning the talking periods of the experiment. During silence, either there are no differences among emotions, or if there are some differences then they are not significant. For example, during silence, the tendency of expressing a neutral state to cause feelings of neutrality did not differ from the tendencies of expressing other target emotions to cause feelings of those emotions. During talking, this tendency was greater for a neutral state than for disgust and fear (passive emotions with low energetic expression) and nearly equal to the corresponding tendencies for anger and happiness (active emotion with more energetic expression).

There is a further outcome of this study that, although statistically not significant (and no claim is made of its generality) is nonetheless interesting. It concerns the contrast between silently watching film segments and talking in the tendency that expressing disgust has to cause feelings of disgust. In the silent condition, disgust was produced more often than fear and happiness (with low statistical significance), while in the talking condition no significant differences were obtained between disgust and either fear or happiness. This

finding supports the influence of contexts on experiencing the emotions that are expressed.

The interpretation of the differences among emotions found in the present study is not straightforward. The cause of feeling, or not feeling, each expressed emotion more than the others is a complicated matter. For example it may be that, during talking, subjects felt one emotion, when expressing it, more than they felt others while expressing those, because subjects had more experience of pretending that emotion in everyday life (e.g.. a neutral state). While the similarity of the expressed emotion to the felt emotion may have caused some emotions to be produced more than others (consider, for instance, the similarities amongst the negative emotions in this study). Still it may be that 'active' emotions, such as anger and happiness, which people use more energy to express, were felt more than 'passive' emotions, which people express using less energy. Furthermore, in the comparison between silence and talking, subjects experienced the emotions they expressed during talking more than during silence, except in the expression of fear and, particularly, disgust. It seems that in the expression of unfeared target emotions while feeling sad, there is some similarity between the expression of disgust and fear.

Moreover, except during the expression of happiness, the intensity of emotion during silence was the same as during talking. Subjects experienced happiness with greater intensity during talking than silence in substituting the expression of happiness for sadness. However, this result was different when the data were analysed without considering whether subjects experienced the expressed emotion at any time during the experiment.

Subjects experienced emotions with greater intensity during silence than talking, except while expressing fear and, particularly, disgust.

The result of this study on subjects' reports of their success was not in agreement with the first study, where no significant difference was found between silence and talking. In the first study, on the other hand, with data from instances in which subjects did not feel the expressed emotion not eliminated from the analysis, subjects reported more success in suppressing their sadness or happiness during silence than talking. However in this study when the data were analysed without considering whether subjects felt the expressed emotions or did not, the only significant difference found was in the expression of happiness, when subjects reported greater success during silence than talking. This contrast between happiness and other emotions may be due to the fact that happiness was the only positive emotion, while the other target emotions were negative. There is a possibility that the task of substituting a negative emotion for another negative one differs fundamentally from substituting the expression of a negative emotion for a positive.

Third Study

The main purpose of this study was to investigate the impact of substituting the expressions of each of four basic emotions, sadness, fear, anger, disgust, as well as a neutral state, on subjects' responses to stimuli. These stimuli were chosen for their ability to elicit happiness. The intensity of emotion and subjects' perception of their success in expressing target emotions were also considered, in further analysis. The data were gathered in periods of silently watching the films and talking afterwards, as in the previous studies.

The findings of this study complement those of the second study, and provide more information on the differences among emotions, as well as the effects of context on the impact of expressing unfeared emotions on felt emotions.

Method

Procedure: The procedure of this study is identical to the second study, except that the **stimuli** evoked happiness (positive emotion) instead of sadness (negative emotion). And in this instance the **Participants** were forty-eight students, twenty-six males and twenty-two females, recruited in a similar way from the university. In fact, as mentioned above, this study is complementary to the second study.

In this study, as in the second study, the degree of intensity of felt emotions, the degree of subjects' success in expressing the specified emotions, and the frequency with which subjects actually experienced the emotions they were instructed to portray, were considered as dependent measures. On the other

hand, the periods of silently watching the film and talking afterward, and the emotions which subjects were instructed to express, were treated as independent variables.

Results

In order to find the differences in impact of the expression of unfelt emotions on emotional experience among the target emotions, the proportions of trials in which the subjects produced the requested emotion were compared. The X^2 test was used, in approaching the problem and determining whether the difference between two proportions was significant. A summary of these results is presented in Table 13.

	Silence P	Talk P	Total P
Neutral vs Disgust	**	***	***
Neutral vs Fear	***	***	***
Neutral vs Anger	***	*	***
Neutral vs Sad	.1	*	**
Disgust vs Fear	*	ns	ns
Disgust vs Anger	ns	.1	ns
Disgust vs Sad	ns	*	*
Fear vs Anger	.1	*	*
Fear vs Sad	**	*	***
Anger vs Sad	.1	ns	ns

Table 13. The significant levels, of the X^2 results, for the comparison are shown in the left column, under conditions of “silence” or “talking” in addition to the combination total of conditions.

Note: * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq 0.001$. (see in Appendix Third Study, Table 13 for more detail)

Furthermore, the silent condition was compared to the talking periods, regarding the tendency of expressing the target emotion to cause feelings of that emotion, as well as intensity of emotion and subjects' perception of their success in expressing an unfelt emotion instead of the felt one. The X^2 test and a one way analysis of variance was used for these comparisons. Tables 14 and 15 show the summary of these results.

Emotion	X²	P
Neutral	2.50	.15
Disgust	.25	.8
Fear	6.88	.02
Anger	8.82	.006
Sad	1.81	.2
Totals	13.83	.0003

Table 14. X^2 results and corresponding significance levels for the comparison between silence and talking, regarding experiencing the expressed emotions.

Emotion	Condition	Intensity		Success	
		Mean	P	Mean	P
Neutral	Silence	2.45	ns	8.1	.06
	Talk	3.63		6.77	
Disgust	Silence	4.25	.09	6.4	*
	Talk	2.81		3.61	
Fear	Silence	3.0	ns	8.0	*
	Talk	3.62		3.92	
Anger	Silence	3.01	ns	4.0	ns
	Talk	4.13		5.63	
Sad	Silence	3.14	ns	4.59	ns
	Talk	2.61		4.92	
Totals	Silence	3.0	ns	6.47	*
	Talk	3.41		5.21	

Table 15. Means and corresponding significance levels, of F test results, for comparison, between silence and talking periods in degree of intensity and Ss' perception of their success. (the events that Ss did not experience the expressed emotions are eliminated)

Note: * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$. see in Appendix Third Study Table 15, for more detail.

Neutral: As can be seen from Figure 11, in both the silent and talking periods, a neutral state was produced by subjects more often than the other emotions. These comparisons are all significant except during the silent condition when sadness was the target emotion, where the result was not significant ($P=.1$); see Table 13. However, the differences between the silent and talking periods in both the degree of intensity of emotion and the experience of a neutral state were negligible (Tables 14 & 15). And although

subjects reported greater success in expressing the neutral state during silence than when talking, the result is not significant ($p=.06$).

Figure 11. a comparison of the frequency with which Ss experienced the requested emotion for the silence and talking.

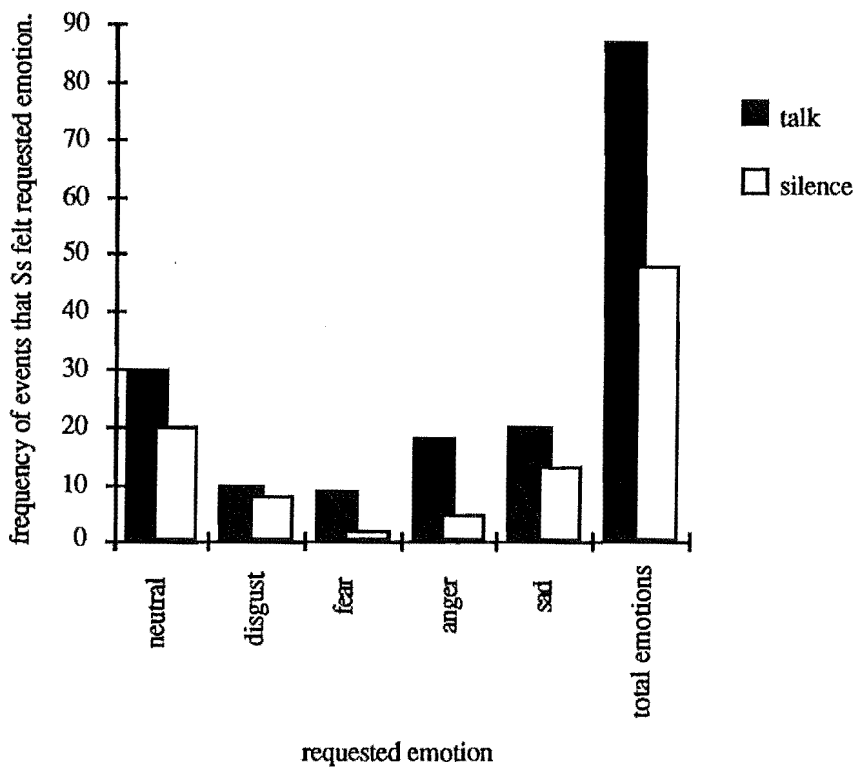


Figure 12 Showing the mean intensity of each emotion which Ss experienced in expressing requested emotion in silence and talking periods

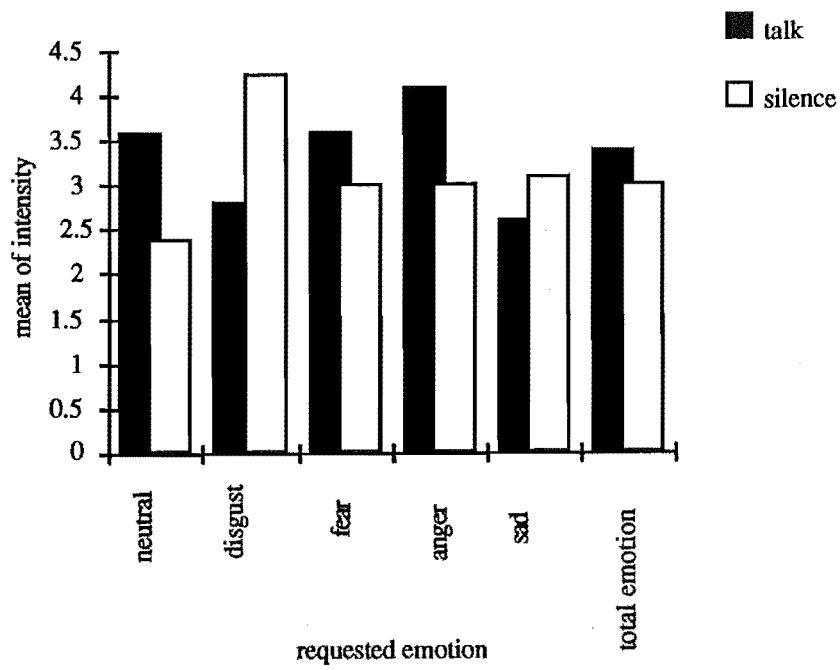
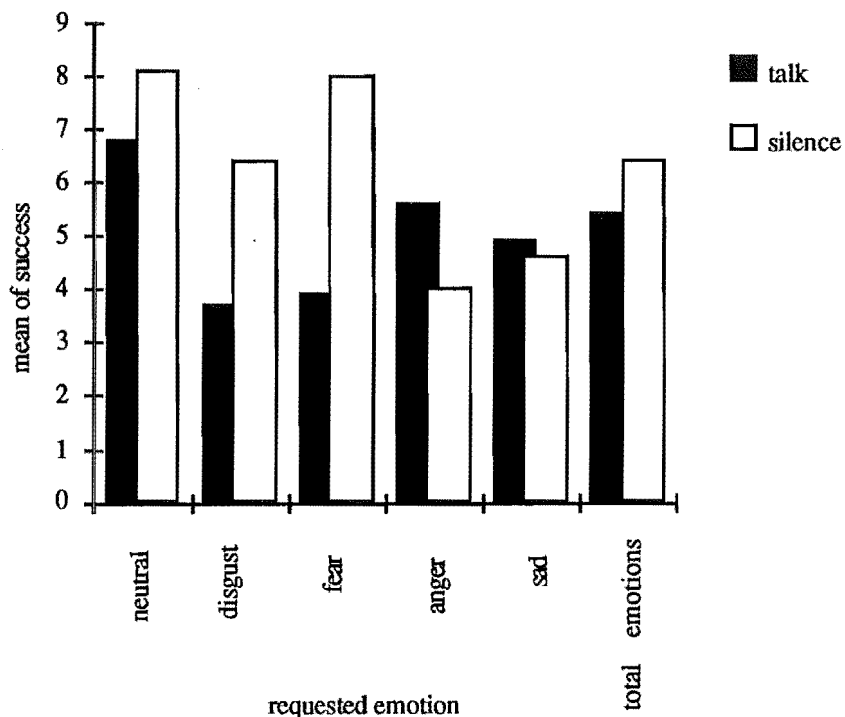


Figure 13 showing the mean of success in expressing requested emotion during silence and talking.



Disgust: In the talking period, disgust was produced as much as fear, but significantly less often than a neutral state or sadness. Disgust was also produced less often than anger, but this result was not significant ($P=.1$). In the silent condition, disgust was significantly more common than fear and significantly less common than a neutral state, but as common as anger and sadness (see Figure 11 & Table 13). However, in expressing disgust and feeling disgust, the silent condition did not differ from the talking period (Table 14), also subjects reported significantly greater success in expression during silence (Figure 13). Although the intensity of emotion during silence

was greater than during talking (Figure 12), the difference was too small to be significant statistically ($P=.09$) see Table 15.

Fear: Fear was produced during talking with the same frequency as disgust, but it was significantly less common than the other emotions (neutrality, anger, sadness). During the silent condition, fear was produced less often than the other emotions; significantly for the neutral state, sadness, and disgust, and not significantly for anger ($P=.1$). Furthermore, in the case of expressing fear and feeling fear, it seems that subjects experienced fear more during talking than silence. Subjects reported that they had more success in expressing the target emotions during silence than when talking. However, the difference between the mean intensity of emotion during the silent condition and talking was negligible.

Anger: In the talking period anger was produced more often than fear significantly, as well as more than disgust but not significantly ($p = .1$). Anger was also produced less often than a neutral state, and almost equally often as sadness. In the silent condition, although anger was produced more often than fear and less often than sadness, the results are not significant ($P_f=.1, P_s=.1$). However anger was produced significantly less often than the neutral state and the difference between anger and disgust in this regard is trivial.

Moreover anger was experienced significantly more often during talking than silence. No significant differences were found between the silent and talking periods in either the degree of subjects' success in expression of anger or in the intensity of emotion.

Sadness: During talking, sadness was produced nearly as often as anger, and less often than the neutral state but more often than fear and disgust, all of these results being statistically significant. In the silent condition, sadness was produced less often than the neutral state but more often than anger, but these two differences are too small to be significant ($P_n=.1$, $P_a=.1$). Sadness was also produced significantly more often than fear. Furthermore the differences between sadness and disgust were not significant. However, the silent condition did not differ significantly from the talking period in either the intensity of emotion, the degree of subjects' success in expression of sadness, or in sadness being felt when it was expressed.

In general (total emotions), the silent condition differed significantly from the talking period in both the tendency of expressing a target emotion to cause feelings of that emotion, and the degree of subjects' success in expressing the target emotion. Subjects experienced the expressed emotion more often during the talking period than in the silent condition while watching the films (see Figure 11 and Table 14. On the other hand, they reported that they had more success in expressing the target emotion during the silent condition than the talking period, Table 15 and Figure 13. However, the difference between the mean intensity of emotion during silence and talking was negligible.

Further analysis was performed on the differences between silence and talking periods, regarding both the intensity of emotion and the subjects' report of their success in expressing the target emotion, during the entire experiment. A one way analysis of variance was also used for these comparisons. The factor was: time of rating (silence or talking) Table 16 indicates the summary of the results.

Emotions	Conditions	Intensity		Success	
		Mean	P	Mean	P
Neutral	Silence	4.33	ns	6.23	ns
	Talk	3.93		6.03	
Disgust	Silence	4.31	*	3.99	ns
	Talk	3.49		3.91	
Fear	Silence	4.79	*	3.58	*
	Talk	3.61		2.62	
Anger	Silence	4.94	.1	4.07	ns
	Talk	4.23		3.65	
Sad	Silence	3.73	.1	4.47	*
	Talk	3.01		3.65	
Totals	Silence	4.41	***	4.46	*
	Talk	3.64		3.96	

Table 16. Means and corresponding significance levels, of F test results, for comparison, between silence and talking periods in degree of intensity and Ss' perception of their success. (during intire of experiment)

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$. see in Appendix Third Study Table 16, for more details.

As can be seen these results are slightly different from the prior results, in which data obtained when subjects did not feel the expressed emotion were eliminated from consideration (described in Table 15). More significant results were obtained in the differences between silence and talking. Except in the expression of a neutral state, the intensity of emotion during silence was greater than during talking; this result was statistically significant for

disgust, fear, and all emotions grouped together, but not significant for anger and sadness ($p = .1$) see Table 16.

The silent condition did not differ from the talking condition, in the degree of success in expressing a neutral state, anger and particularly, disgust, while the results of the prior analysis show that subjects had more success during silence in expressing a neutral state and disgust. Furthermore, in the present analysis greater success was found during silence in expressing sadness, whereas in the prior analysis (where only data in which subjects felt sadness were considered) the silent condition had almost the same effect as talking on the degree of subjects' success in expression of sadness.

Discussion

The results show that a neutral state, either during watching films or in the talking periods, was experienced when expressed more often than the other emotions. It may be that subjects experienced a neutral state when expressing it more often than other emotions, across many conditions, because this seems in keeping with real-life experience. Furthermore, it is also possible that the expression of fear in place of happiness, particularly during silence, was more difficult than the other tasks. This was because subjects experienced fear less when expressing it than they experienced the other emotions they expressed.

Furthermore the intensity of the felt expressed emotion during the silent condition did not differ significantly from talking periods. This result was not confirmed when the data were analysed without considering whether subjects felt the expressed emotion, for the entire experiment, where it was found that there was a greater tendency to feel emotions intensely during silence than during talking.

Further analyses of subjects' perception of their success show there were more events in which subjects had more success during the silent condition than during talking. Therefore the correct interpretation of the association between the intensity of emotion and the degree of subjects' success in expressing the unfelt emotion (in both the entire experiment and the condition that subjects felt the expressed emotion) is not straightforward.

Moreover, although subjects produced the emotions which they were instructed to express more often during talking than during silence while watching the films, this result was significant only for the expression of fear, anger and all emotions grouped together.

The comparison between sad films with happy films in dissimulation of emotions.

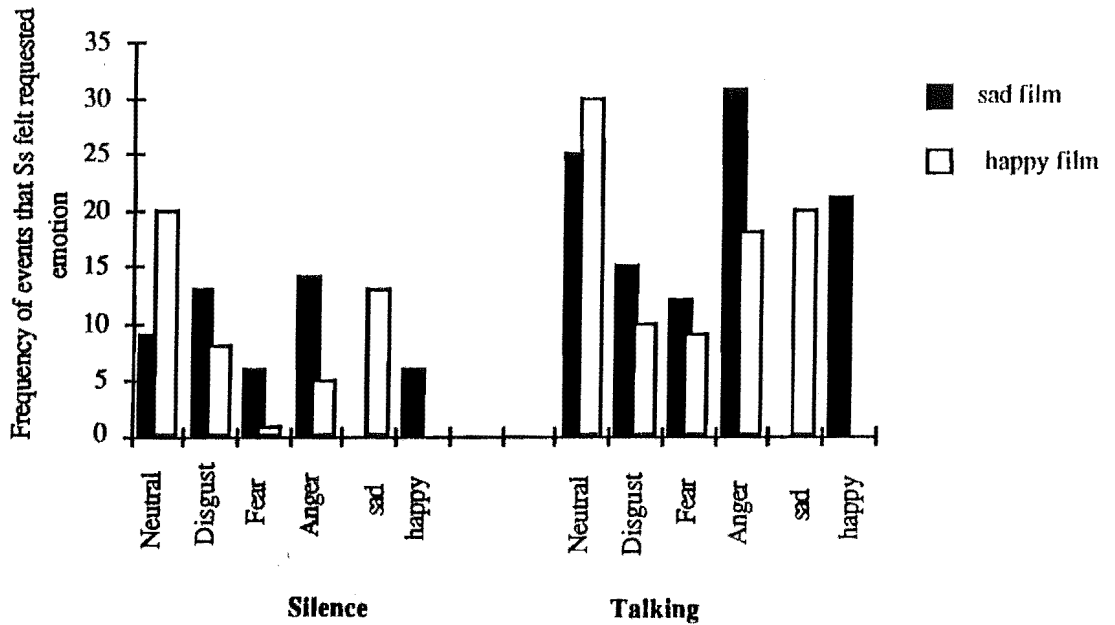
Based on the findings of some researchers, there are some differences between positive (e.g., happiness) and negative (e.g., sadness) emotions. Therefore it is worthwhile to study the effects of these differences in substituting the expression of unfelt target emotions for true feelings of sadness and happiness; previously no research has examined these differences across emotions for different contexts. The X^2 test was used for these comparison. As can be seen from Table 17 and Figure 14, during the talking period, except for anger, which subjects experienced more often after watching sad films than happy films, no comparisons were significant during the talking period.

	Happy film Vs Sad film		
	silence	Talk	total
neutral	*	ns	*
disgust	ns	ns	ns
fear	*	ns	ns
anger	*	*	**
sadness vs happiness	.1	ns	ns
total	ns	ns	ns

Table 17. The significant levels, of the X^2 results, for the comparison between sad films with happy films, regarding the effects of expression on emotional experience, for each single emotion.

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$. (see in Appendix Table 17 for details)

Figure 14 a comparison of the frequency with which Ss experienced the requested emotion during sad and happy films



In the silent period, each emotion except disgust varied between the sad and happy films. Subjects experienced fear and anger while viewing the sad films more often than while viewing the happy films, and the neutral state was experienced more often while watching the happy films than the sad films. However, although more sadness was produced in watching the happy film than happiness in watching the sad film, the result is not significant ($P=.1$); see Figure 14. In the total condition (in which silence and talking are grouped together) the differences between disgust in the happy film and in the sad film, fear in the happy film and in the sad film, sadness in the happy film and happiness in the sad film were not significant (see Table 17). Anger was experienced more often in the sad film than in the happy

film, and a neutral state was experienced less often in the sad film than in the happy film.

However, it appears that the sad film condition differed from the happy film condition. Furthermore, the results of prior analyses, comparing emotions regarding the impact of the expression of unfeelt emotions on emotional experience, revealed more differences between sad and happy films (see Table 18).

	happy film			sad film		
	talk	silence	total	talk	silence	total
neutral vs disgust	***	**	***	*	ns	ns
neutral vs fear	***	***	***	**	ns	**
neutral vs anger	*	***	***	ns	ns	ns
neutral vs sad	*	.1	**	---	---	---
neutral vs happy	---	---	---	ns	ns	ns
disgust vs fear	ns	*	ns	ns	.1	.1
disgust vs anger	.1	ns	ns	**	ns	*
disgust vs sad	*	ns	*	---	---	---
disgust vs happy	---	---	---	ns	.1	ns
fear vs anger	*	.1	*	***	.09	***
fear vs happy	---	---	---	.1	ns	ns
fear vs sad	*	**	***	---	---	---
anger vs sad	ns	.1	ns	---	---	---
anger vs happy	---	---	---	.1	.09	*

Table 18. The significant levels, of the X^2 results, for the comparison shown in the left column, under conditions of "happy" or "sad" during "talking" or "silence" in addition of the total of conditions or periods.

Note: * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$. see in Appendices Tables 9 and 13 for details.

For example, in the happy film in either the silent or talking periods, a neutral state was experienced more often by subjects than the other emotions. In contrast, in the sad film, particularly in the silent condition, there was no significant difference between the neutral state and other emotions (disgust, fear, anger, and happiness), and in the talking period, a neutral state was experienced by subjects more often than only disgust and fear. The difference between the neutral state and both anger and happiness was trivial.

Further, in both the sad film and the happy film, fear during talking was produced with the same frequency as disgust, but it was less common than other emotions. During the silent condition, the happy film produced fear less often than other emotions, but in the sad film no significant difference was found between fear and other emotions.

The differences between silence and talking, regarding the effects of expression on feeling, during the sad film and the happy film, shed more light on this issue.

Talk Vs Silence			
	happy film	sad film	total
neutral	ns	**	***
disgust	ns	ns	ns
fear	*	ns	**
anger	**	**	**
sad	ns	--	ns
happy	--	**	***
total	***	***	***

Table 19. The significant levels, of the X^2 results, for the comparison between silent conditions with talking periods, regarding the effects of expression on emotional experience, for each emotion.

Note: * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$. (see Tables 10 and 14 in appendices for more details)

In the sad film, there was no significant difference between the silent and talking periods during the expression of disgust and fear, but the difference between these two periods was significant during the expression of a neutral state, anger and happiness, see Figure 14. For the happy film, while the difference between silence and talking was significant during the expression of fear and anger, the differences found during the expression of the neutral state, disgust, and sadness between these two periods were not significant. And in general (when sad and happy films were grouped together) the difference was significant during the expression of the neutral state, fear, anger, happiness, and total emotions, indicating that subjects elicited these emotions more during talking than silence. In expressing sadness and disgust the silent and talking periods were not significantly different (see Table 19).

Moreover, in order to confirm the differences obtained in the prior analyses between silence and talking, further analyses were conducted by considering the proportion of trials in which the subjects produced the requested emotion during the silent and talking conditions. A paired comparison *t* - test was used for examining whether the proportion observed during silence was the same as during talking. Before this analysis the proportion data were normalized using the standard standard $\sin^{-1} \sqrt{p}$ transformation.

In general (where sad and happy films were grouped together) a significant difference was obtained between the silent and talking periods. Subjects experienced the requested emotion during talking more than during silence. Also, the difference between the silent and talking periods was significant for both the happy film and the sad film and confirmed the prior findings. These results are summarized in Table 20.

Talk vs silence (happy film)		Talk vs silence (sad film)		talk vs silence (sad & happy films)	
t	p	t	p	t	p
3.831	.0186	3.943	.0169	5.557	.0014

Table 20. *t* test results and corresponding significant levels for comparison, between talking and silence periods, of the proportion of trials in which Ss produced the requested emotion.

Further differences were found in the effects of sad films and happy films on the subjects' perception of their success in expression. More often in viewing happy films than sad films, subjects reported having more success during silence than talking (see tables 11 and 15). No significant differences

were found between silence and talking for sad films, except in the expression of happiness instead of sadness, only when the data from the entire experiment were considered (that is, when data where subjects did not feel the expressed emotion were not eliminated). Subjects reported greater success during silence than talking (Table 20).

In the case of happy films, significant results were found for the expression of disgust, fear, and total emotions, when only data in which subjects felt the target emotion were considered in the analysis (Table 15 in the third study). And when all data were considered, the results were significant in the expression of fear, sadness and in general (total emotions) see Table 16. However it seems, in substituting the expression of happiness for other emotions, subjects had more often success during silence than talking. Whereas in replacing the expression of sadness for other emotions silence did not differ significantly from talking, in many contexts.

General Discussion

The results revealed that subjects were more likely to experience the emotion which they were instructed to express when talking than when silent. The effects of spoken words and verbal expression on cognition and mental imagery could be one possible explanation for this finding. As Mendolia & Kleck (1993) suggested, the way one talks about one's feelings may influence the emotion experienced, because the emotion related words would change one's perception. But there is another alternative: it may be that when one tries to express one emotion while experiencing another, the more muscles, body movement, and emotional words related to the specific unfelt emotion that are engaged in expressing that emotion, the more that emotion would be experienced. In the talking period, subjects expressed unfelt emotions verbally and also through facial expression and posture.

However, it is also possible that during talking and not viewing films, the impact of stimuli on the expressed emotion is less than while silently watching the films. Although this idea is compelling, the subjects' report of greater success in their expression, during silence casts some doubt on it.

We now turn to the difference between silent and talking periods across emotions, in subjects who have viewed happy films and sad films. The results show that, in both happy and sad films, subjects felt more anger during talking, but the difference between silence and talking was not significant in the expression of disgust. These conditions (concealing sadness and happiness) had the reverse effect for fear and the neutral state. Expression of the neutral state while subjects were feeling sad produced a

neutral state more often during talking than silence. However, expression of the neutral state while subjects were feeling happy was no more likely to produce a neutral state in talking or silence. Subjects produced more fear during talking in the happy films whereas in the sad films the difference between silence and talking was not significant.

However, it appears that in producing unfelt emotions, in the process of replacing the expression of a felt emotion with that of another emotion, the impact of sad films was different from that of happy films in some contexts across emotions. It makes intuitive sense that attempting to express one negative emotion while feeling another negative emotion is different from attempting to express a positive emotion while feeling a negative emotion, and studies show that different parts of the brain are used in feeling positive and negative emotions (e.g., Gainetti, 1972; Tucker, 1981; Reuter, Lovenz & Davidson, 1981; Leventhal & Tomarken, 1985)

Substituting the expression of anger for sadness produced more anger than substituting the expression of anger for happiness in both the silent and talking periods. Happy films did not differ from sad films in their effect on the expression of disgust, either in the silent period or during talking. Expression of a neutral state was more likely to produce a neutral emotional state while viewing the happy films than the sad films, whereas during talking afterward there was no significant difference between the happy and sad films in this regard. In the silent period fear was produced in the sad films more than in the happy films, despite the fact that in the talking period the differences in the effect of sad films and happy films were not significant. It seems likely that substituting the expression of fear for sadness is easier than substituting the expression of fear for happiness

during silence, and on the other hand that substituting a neutral state for sadness is more difficult than substituting a neutral state for happiness during silence. This needs further study.

A further interesting result was that, while there was a tendency for expressing sadness while viewing happy films to change the subject's feelings from happiness to sadness, the reverse tendency, for expressing happiness during exposure to the sadness stimulus to change the subject's feelings from sadness to happiness, was not apparent. More study is necessary to confirm this, as the result was not significant. In general (where data from the silent and talking conditions are grouped together), a subject expressing anger was more likely to experience anger if viewing a sad film than if viewing a happy film, whereas a subject expressing a neutral state was more likely to feel a neutral state if viewing a happy film than if viewing a sad one. For the other emotions, no differences between happy and sad films were significant. Therefore it can be concluded that when a person is sad and tries to express anger or is happy and pretends a neutral state, there is a greater possibility of feeling the expressed emotion (anger in sadness and neutral in happiness) than in the case of other target emotions.

Summary and conclusion

The impact of sadness on the expression of unfelt emotions differed to that of happiness across emotions in some contexts. For example, in response to happy films a neutral state was experienced when subjects expressed it more often than other emotions were experienced when expressed. But in response to sad films, there was not such a difference between neutral and

other emotions during the silent period. And during talking the neutral state was only felt more often than disgust and fear, and was felt with nearly equal frequency to the other target emotions. In other words, more significant results were found in the differences between the neutral state and other emotions in response to happy films, particularly during silence, than in response to sad films. Therefore, it may be that concealing happiness is easier than concealing sadness. This result is consonant with the result found in the first experiment showing that females were more likely to feel a neutral state when they suppressed their happiness than when they suppressed their sadness.

The sad films were not different from the happy films in their effect on the likelihood of the expression of disgust to produce feelings of disgust. But more anger was produced in viewing sad films by subjects instructed to express anger, than in viewing happy films. Subjects experienced the expressed emotion during talking more than during silence in general, but in some contexts the difference between silence and talking in this regard was not significant. For anger the difference was significant in either condition.

Clearly, further study is needed to explore these complexities. It may be that the substitution task required here had specific characteristics for each emotion. The process of expressing one emotion while feeling another is too complicated to be easily generalized. For example, one theory in the literature asserts that some of the muscles used for communication of emotion can be controlled voluntarily, while others cannot (e.g., Ekman & Friesen, 1974; Ekman, 1988). Another theory states that the muscular arrangement associated with an emotion will produce that emotion internally (e.g., Levenson, Ekman, & Friesen 1990). Combining these theories, one

can conclude that the quality of produced emotion, in substituting the expression of unfelt emotion for felt emotion, would be different. Also the interaction between the suppression of felt emotion and simultaneous expression of another unfelt emotion, is clearly of interest. It may be the substitution of the expression of one emotion for another is a special case and that it is more complicated than either the suppression of the felt emotion, or the expression of an unfelt emotion alone. Further research is needed to explore the impact of expression of an unfelt emotion on a felt emotion.

Furthermore, it is worthwhile considering the differences found between silence and talking. There is evidence that the way a person expresses a felt emotion immediately after arousal is an important factor in their expression while remembering the event later on, and also in the length of time after the event for which it will retain its emotional power (e.g., Cioffi & Holloway; Mendolia & Kleck 1993). Therefore, there is some possibility that the context of the talking period for each subject was related to how he or she expressed the emotion during the silent period.

Sex Differences in the Suppression of the Expression of Sadness and Happiness

As mentioned earlier, results appearing in the analysis of data from both sexes combined can sometimes be applicable to one sex only, and thus data should be analysed separately for each sex to increase this study's validity. Such separate analysis is uncommon in the literature pertaining to this topic.

In order to examine sex differences in the awareness of emotional expression and in the intensity of emotion, additional analyses were conducted on the data from the second and third studies. The independent variables considered were: the sex of subjects, the period of the experiment (silently watching film or talking afterwards) the emotions which subjects were instructed to express, and whether subjects felt the expressed emotion. On the other hand, the intensity of emotion, the degree of subjects' success in expression, and the interviewers' recognition of the subjects' emotion were considered as dependent variables.

Results

To clarify in which conditions of the experiment subjects were aware of their success in expressing the target emotion when exposed to stimuli inducing another emotion, the association between subjects' perceptions of their success at the task and interviewers' recognition of the subjects' emotion was examined. In this analysis Correlation coefficient was used and the results are summarised in Table 21.

film type	gender	Felt expressed emotion			Unfelt expressed emotion		
		silence	talk	total	silence	talk	total
happy film	female	ns	ns	ns	**	***	***
	male	*	ns	.08	**	**	***
sad film	female	ns	ns	ns	*	***	**
	male	*	*	***	*	ns	*
sad & happy films	female	ns	ns	ns	***	***	***
	male	**	*	***	***	**	***

Table 21. The significant levels for the correlation between the perception of Ss' success and the actual success, under conditions of "happy" or "sad" during "silence" or "talking" in addition of total of conditions of periods.

Note: * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$.

In the condition in which subjects did not feel an emotion which they expressed, the relationship between females' reports of their success in expressing the requested emotion and the emotion perceived by the interviewers was significant, either during the sad films or happy films in both conditions of silence and talking periods. For males this relationship was not significant during talking about sad films but was significant in the talking period in response to happy films and in the periods of silence in responses to both happy and sad films. In general (where data from the sad and happy films are grouped together), either while silently watching the film or while talking, there were significant correlations between subjects' perception of their success in expressing the requested emotion and the emotion perceived by interviewers for both males or females.

It seems that in every condition of the experiment in which subjects did not experience the expressed emotion, females were aware of their expression. In contrast, when subjects experienced the expressed emotion, results show that there was no significant relationship between females' reports of their success in their expression, and the emotion perceived by interviewers, in any condition of the experiment. This applies in periods of silence and talking, in viewing the sad or happy film clips, and also in the total of sad and happy film clips.

For males there were significant results in every condition of silence; that is, both for sad and happy films as well as generally (the total of sad and happy films). However, during talking, the relationship between these two variables was not significant for the happy films, whereas it was significant for either the sad films or the total of sad and happy film clips, see Table 21.

In further analyses, a one way analysis of variance was used in comparisons between males and females during silently watching film clips and talking afterwards, regarding the degree of subjects' success in expressing the requested emotion; and the change of intensity of emotion throughout the experiment, regardless of whether subjects felt the expressed emotions. The factor was: subjects' gender (males or females) Results indicate that while silently watching the sad films, there was no sex difference in the subjects' perception of their success in substituting the expression of other target emotions for sadness, (Table 22) whereas in the happy film condition females reported that they were more successful than males in substituting fear and sadness for happiness (Table 23).

Emotion	Gender	Silence		Talk	
		Mean	P	Mean	P
Neutral	Males	6.6	ns	6.4	ns
	females	5.7		5.9	
Disgust	males	5.1	ns	5.4	ns
	females	5.3		5.8	
Fear	Males	3.7	ns	3.2	*
	females	4.2		4.6	
Anger	males	4.1	ns	4.2	*
	females	4.9		5.7	
Happy	males	5.7	ns	4.6	ns
	females	6		5.3	
Total emotions	males	5	ns	4.7	*
	females	5.2		5.3	

Table 22. Means and corresponding significant levels, of F test results, for the comparison between males' success in expression with females' during SAD films.

Note: * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$.

Emotion	Gender	Silence		Talk	
		Mean	P	Mean	P
Neutral	Males	6.6	ns	6.3	ns
	females	5.8		5.9	
Disgust	males	4	ns	4	ns
	females	3.9		3.7	
Fear	Males	3	*	2.4	ns
	females	4.5		2.9	
Anger	males	3.8	.1	3.3	ns
	females	4.5		4.1	
Sad	males	3.9	*	2.9	**
	females	5		4.6	
Total emotions	males	4.3	ns	3.6	.1
	females	4.7		4.3	

Table 23. Means and corresponding significant levels, of F test results, for the comparison between males' success in expression with females' during Happy films.

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$.

However during talking, after both sad and happy films, in general (where all emotions are grouped together), females reported that they were more successful in substituting their feeling for the requested emotion, that this result is significant only during sad films. Across emotions, in the expression of neutrality and disgust in response to both sad and happy films,

and in the expression of fear and anger in response to happy films and of happiness in response to sad films, the mean of females' success in their expression did not differ significantly from males' mean success. Moreover, results revealed that females were more convincing in the expression of sadness in happy films as well as fear and anger in sad films see Figures 15 and 16.

Figure 15 comparison between the degree of success in expressing requested emotion for female and male during SAD film.

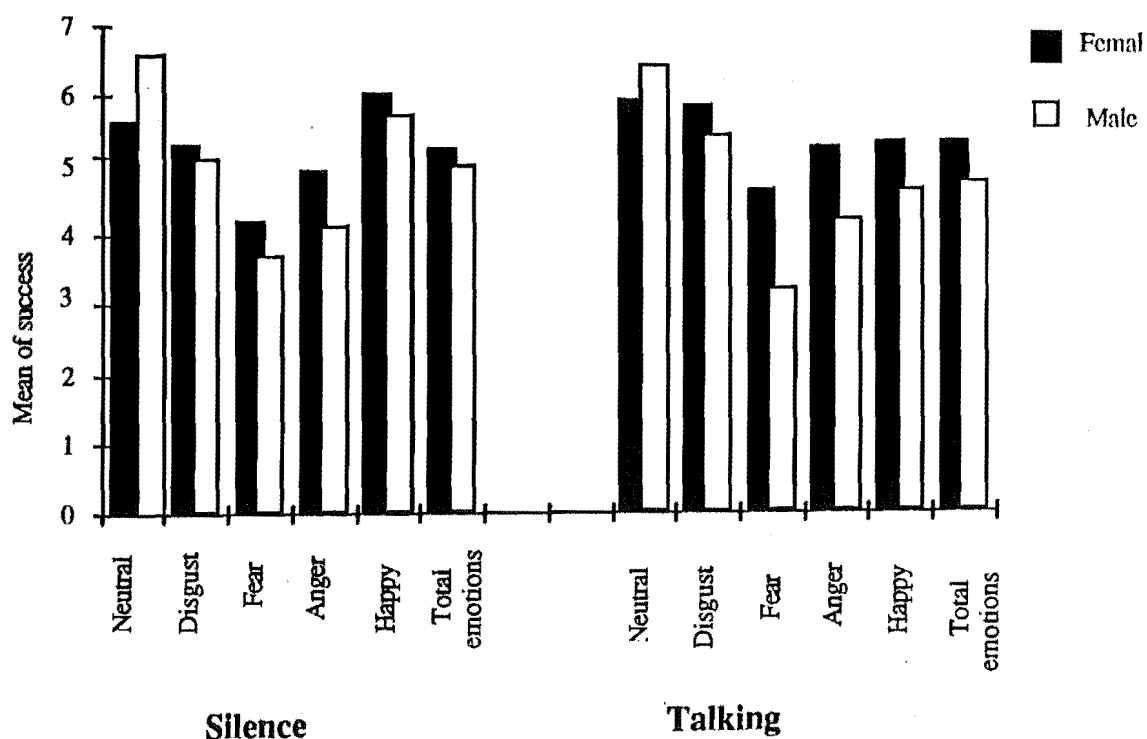
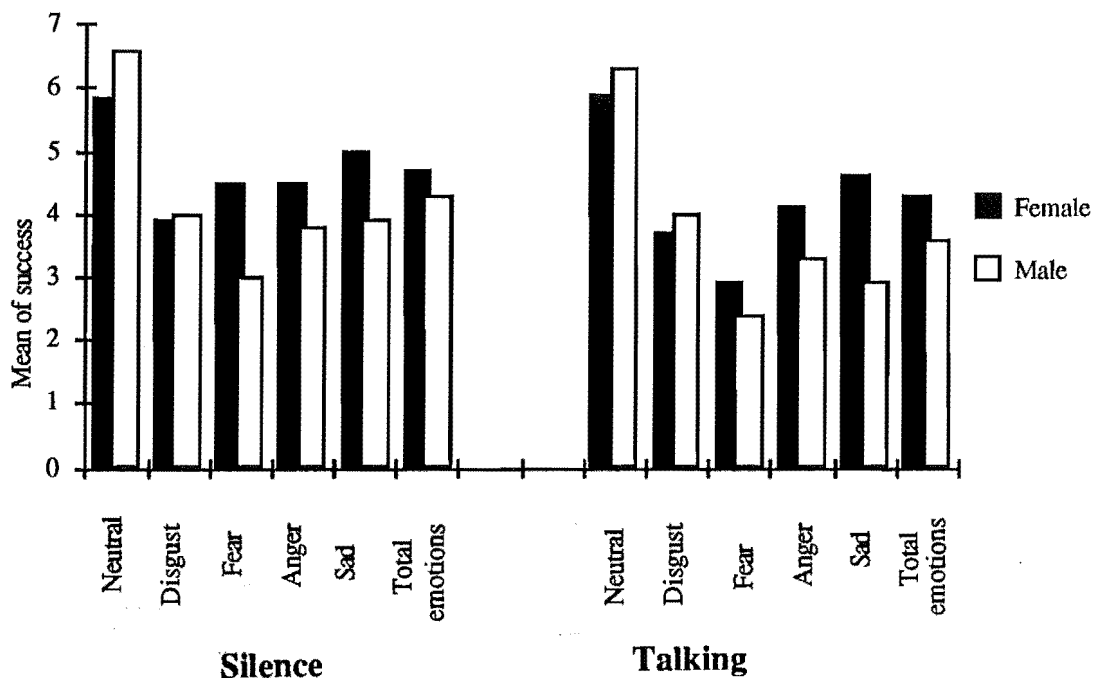


Figure 16 comparison between the degree of success in expressing requested emotion for females and males, during HAPPY films.



During silent periods, the mean intensity of females' emotion in either the sad or happy film conditions in the expression of neutrality, fear, anger, sadness, as well as emotion grouped together, were greater than males'. However, in expressing disgust in happy films and happiness in the sad films there were no significant differences between the mean intensity for males and females, see Tables 24 and 25.

Emotion	Gender	Silence		Talk	
		Mean	P	Mean	P
Neutral	Males	3.9	**	2.4	***
	females	5.85		4.4	
Disgust	males	3.3	***	2.8	***
	females	5.4		4.7	
Fear	Males	3.6	*	2.8	*
	females	4.97		4.2	
Anger	males	3.4	***	3.1	.1
	females	5.4		4.0	
Happy	males	4.6	ns	2.8	***
	females	5.1		4.9	
Total emotions	males	3.8	***	2.8	***
	females	5.4		4.4	

Table 24. Means and corresponding significant levels, of F test results, for the comparison between males' emotional Intensity with females' during SAD films.

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$.

Emotion	Gender	Silence		Talk	
		Mean	P	Mean	P
Neutral	Males	3.2	***	2.3	***
	females	5.6		5.7	
Disgust	males	4.5	ns	3.4	ns
	females	4.1		3.5	
Fear	Males	4	*	3.2	ns
	females	5.7		4	
Anger	males	3.5	***	3.1	***
	females	5.3		5.7	
Sad	males	3.2	*	2.5	.08
	females	4.4		3.5	
Total emotions	males	3.7	***	2.9	***
	females	5.2		4.5	

Table 25. Means and corresponding significant levels, of F test results, for the comparison between males' emotional Intensity with females' during HAPPY films.

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$.

During talking, however, females' emotional intensity was greater than males' intensity throughout the sad films, significantly in the expression of neutrality, disgust, fear and happiness, but less so in the expression of anger ($P=.1$). The significant differences were also obtained during the happy films for the expressions of neutrality and anger, while no significant results were found regarding the expression of disgust and fear. However the difference between females' intensity of emotion and males' intensity, in the

expression of sadness, was too small to be significant statistically ($P=.08$)
see Figures 17 and 18.

Figure 17 the comparison between females' emotional intensity with males',
during SAD films.

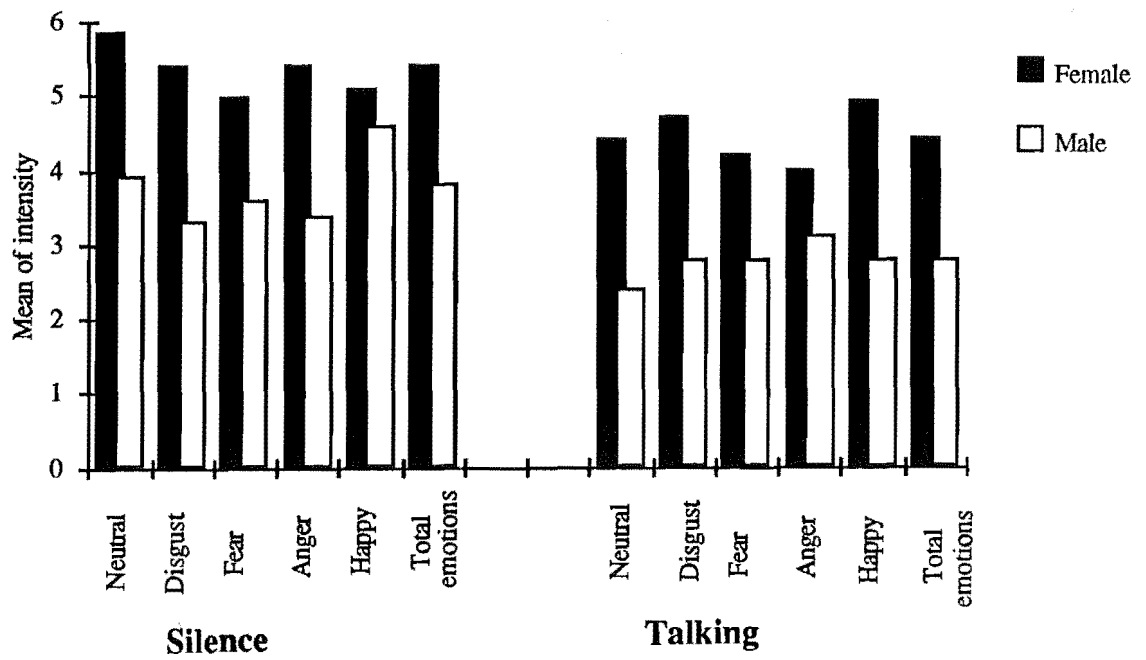
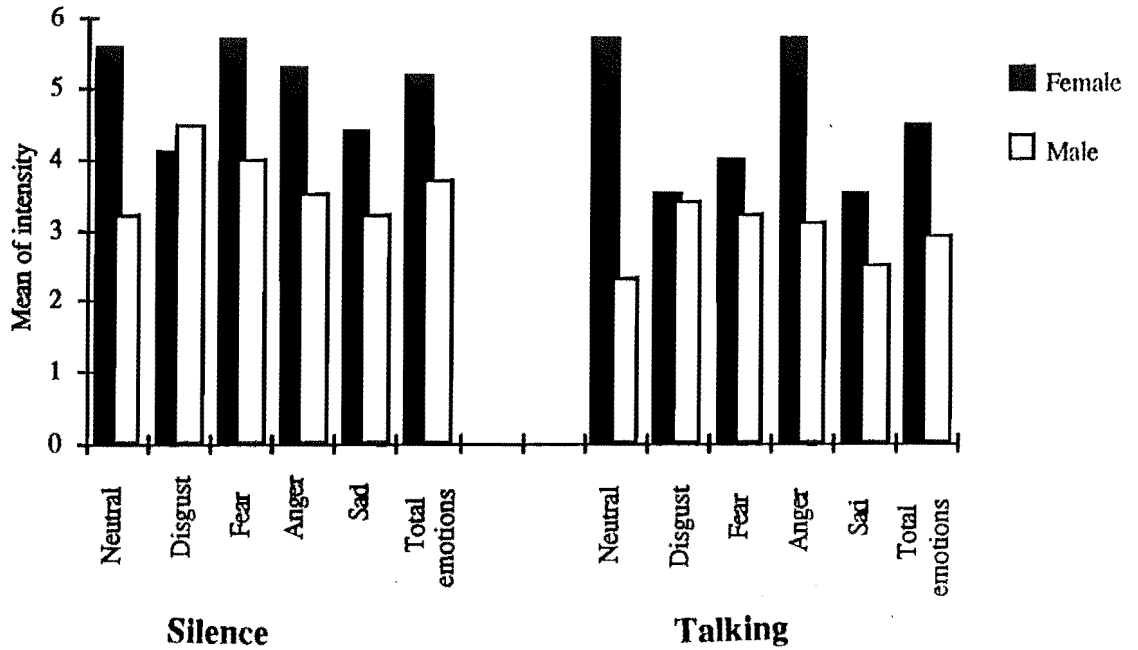


Figure 18 the comparison between females' emotional intensity with males', during HAPPY films.



A further consideration in this study was the comparison between the periods of silently watching films and the periods of talking, with respect to the intensity of emotion. Again a one way analysis of variance was used for this analysis. The factor was: time of rating (silence or talking). Tables 26 and 27 show that in general (where all emotions were grouped together), during the silent period, males' and females' intensities were greater than during talking, in response to both sad and happy films. And across emotions, males reported greater intensity in the silent period when they were exposed to sad films but were instructed to express either happiness or a neutral state. During the happy films although the males' intensity of emotion in silent conditions were greater than talking periods in either the expression of neutral state or disgust the results did not reach to the

significant level ($P=0.1$). Females' intensity of emotion during silence was greater than during talking in the substitution of expressions of fear for happiness, and either neutrality or anger for sadness.

Emotion	Period	Females		Males	
		Mean	P	Mean	P
Neutral	silence	5.85	*	3.9	**
	talk	4.4		2.4	
Disgust	silence	5.4	ns	3.3	ns
	talk	4.7		2.8	
Fear	silence	4.97	ns	3.6	ns
	talk	4.2		2.8	
Anger	silence	5.4	*	3.4	ns
	talk	4.0		3.1	
Happy	silence	5.1	ns	4.6	**
	talk	4.9		2.8	
Total emotions	silence	5.4	**	3.8	***
	talk	4.4		2.8	

Table 26. Means and corresponding significant levels, of F test results, for the comparison between silent conditions with talking periods, regarding the intensity of emotion, during SAD films.

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$.

Emotion	Period	Females		Males	
		Mean	P	Mean	P
Neutral	silence	5.6	ns	3.2	.1
	talk	5.7		2.3	
Disgust	silence	4.1	ns	4.5	.1
	talk	3.5		3.4	
Fear	silence	5.7	**	4	ns
	talk	4.0		3.2	
Anger	silence	5.3	ns	3.5	ns
	talk	5.7		3.1	
Sad	silence	4.4	ns	3.2	ns
	talk	3.5		2.5	
Total emotions	silence	5.2	**	3.7	**
	talk	4.5		2.9	

Table 27. Means and corresponding significant levels, of F test results, for the comparison between silent conditions with talking periods, regarding the intensity of emotion, during HAPPY films.

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$.

The mean of males' success in expressing the requested emotion was greater during silence than during talking in general (emotions grouped) during happy films and, across emotions, in expressing either happiness in sad films or sadness in happy films. Females' success in their expression of emotion did not differ significantly between periods of silence and talking in any condition of the experiment, except in expressing fear for happiness, where they were more successful during silence than during talking see Tables 28 and 29.

Emotion	Period	Females		Males	
		Mean	P	Mean	P
Neutral	silence	5.7	ns	6.6	ns
	talk	5.9		6.4	
Disgust	silence	5.3	ns	5.1	ns
	talk	5.8		5.4	
Fear	silence	4.2	ns	3.7	ns
	talk	4.6		3.2	
Anger	silence	4.9	ns	4.1	ns
	talk	5.2		4.2	
Happy	silence	6.0	ns	5.7	*
	talk	5.3		4.6	
Total emotions	silence	5.2	ns	5.0	ns
	talk	5.3		4.7	

Table 28. Means and corresponding significant levels, of F test results, for the comparison between silent conditions with talking periods, regarding Ss' success in expressing the requested emotions, during SAD films.

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$.

Emotion	Period	Females		Males	
		Mean	P	Mean	P
Neutral	silence	5.8	ns	6.6	ns
	talk	5.9		6.3	
Disgust	silence	3.93	ns	4.0	ns
	talk	3.7		4.0	
Fear	silence	4.5	*	3.0	ns
	talk	2.9		2.4	
Anger	silence	4.5	ns	3.8	ns
	talk	4.1		3.3	
Sad	silence	5.0	ns	3.9	*
	talk	4.6		2.9	
Total emotions	silence	4.7	ns	4.3	*
	talk	4.3		3.6	

Table 29. Means and corresponding significant levels, of F test results, for the comparison between silent conditions with talking periods, regarding Ss' success in expressing the requested emotions, during Happy films.

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$.

Discussion

Results reveal that females' awareness of how their expression was perceived when they attempted to substitute the expression of a target emotion for a stimulated one (sadness or happiness) was very strongly related to whether they felt the target emotion. The finding suggests that possibly females knew how they conveyed the target emotion when it remained unfelt, whereas when they felt the expressed emotion they were not aware of their expression. Another possible explanation for the strong difference between the conditions of felt and unfelt target emotion is that the interviewers' recognition of emotion may be different in the situations of felt expressed emotion and unfelt expressed emotion. In other words, females' ability in receiving an emotional message depends upon whether the message relates to emotions which are felt or not. This finding may be consonant with Hall (1978, 1979, 1984) who shows females' advantage over males in decoding non-verbal behavior decreases when the communication is dishonest.

Males' awareness of their own expression was not as dependent as females' on whether the target emotion was experienced. In the silent period, males were aware of their expression without exception, that is, both during sad and happy films, and also regardless of whether they felt the target emotion. During talking periods, however, males knew how their expressions were perceived except in two conditions: when they did feel the target emotion during the happy films, and when they did not feel the target emotion during the sad films. The lack of significant correlation in the above mentioned

conditions for males indicates that they may not be aware of their expression during talking, when substituting a target emotion for happiness (while feeling the target emotion) or sadness (while not feeling the target emotion).

Overall, the results show that in the deceptive communication of emotion, males are more often aware of how their expression will be perceived than females. This conclusion is consistent with the results of the first study, which found that in concealing sadness and happiness, there were no significant correlations between the females' perception of their success and their actual success in both the silent and talking periods, whereas for males, the correlation between these two variables was not significant only during the sad films.

The lack of significant correlation between subjects' actual success and their perception of their success found in some contexts of this study is corroborated by the results of Riggio, Widaman and Friedman's study (1985) of six posed emotions. This is also consistent with Zuckerman & Larrence's view (1979). However nothing was found in the literature supporting or explaining the other results revealed in the present study: the strong evidence that, in some contexts, subjects are aware of their expression while dissimulating emotion, and the apparent male advantage over females in awareness of expression, particularly during silence.

Overall, females reported greater success in their expression than males, except in pretending neutrality (during both sad and happy films) and disgust (during happy films only), but this was not significant for every relevant comparison. In general (emotions grouped), in the talking period following both sad and happy films, females' perception of their success in conveying

the requested expressed emotion were greater than males'. But the result was significant only during sad films.

Across emotions this female advantage was also found to be significant during talking in the expression of fear, anger (viewing sad films), and sadness (viewing happy films) and during the silent period, in the expression of sadness, and fear (viewing happy films). The finding of a female advantage over males in expressing sadness and fear is supported by Wallbott's study (1988). However, that females were more successful in expressing anger in some conditions of the experiment is inconsistent with Wallbott's theory but is consonant with the conclusion shown by Friedman (1979).

Furthermore, in this study males reported, in general, that they had more success during silence than talking in substituting target emotions for happiness and, more specifically, in the expression of sadness during happy films and happiness during sad films. For females the difference between the periods of silence and talking is in general negligible, and across emotions, only in the expression of fear during happy films did females report more success during silence than talking.

The results demonstrate that the effects of sex differences on the degree of success in substituting emotions are more pronounced during talking than silence. In the silent period, the effects of sex differences (except for the expression of fear and sadness) are tentative. It may be that females' ability in verbal deceptive emotional communication is better than males'. Thus, it appears that the finding of this study is consistent with the superior verbal ability of females over males evident in the sex difference literature (e.g.

Maccoby & Jacklin, 1974). Moreover, it is possible that when the act of dissimulating an emotional expression is made more difficult (as for instance when the stimulated and target emotion are opposite, such as when substituting positive emotions for negative and negative emotions for positive), males are less successful during talking than silence.

Furthermore, overall, both female and male subjects experienced emotions with greater intensity during silence than talking. This difference between silence and talking across emotions, for females, is reliable in the expression of fear in happy films, neutral and anger in sad films. For males, in the expression of neutral and happiness during sad films. Moreover, in most conditions of the experiment, females' intensity of emotion was greater than males' (even in the expression of anger). This supports researchers who argue that females experience emotion more intensely than males (e.g., Allen & Hansher, 1974; Allen & Haccourt, 1976; Diener, Sandvik & Larsen, 1985; Grossman & Wood, 1993), but is not consistent with those researchers who exclude anger (e.g., Balswick & Avertt, 1977; Fujita, Diener & Sandvik, 1991; Fabes & Martin, 1991). The difficulty with the task of expressing anger for females may be that they experience more intense emotion in expressing anger than males. Furthermore, in this study subjects were instructed to express anger while they were presumably sad or happy. As a result, these experiments differed from other studies, where subjects either reported experiences from everyday life or were asked to express anger in the neutral state.

To summarize, taking the results of this study in relation to similar prior studies, the evidence demonstrates the existence of sex differences in emotional communication. The views that females experience emotion more

intensely than males and that females have an advantage over males in verbal ability are supported. In most conditions of the experiment, except in the expression of fear, sadness and anger, females' perception of their success in the dissimulation of emotion did not differ significantly from males' perception of their success. The difference between the periods of silence and talking in the degree of success in communicating the target emotion is negligible for females (except for fear in happy films). However, when the task was difficult, it seems that males were more successful in their expression in the silent period than talking. Also results of this study regarding males' awareness of their expression are more conclusive regarding the silent part of the experiment than the talking part.

A further interesting result, regarding females only, was the extreme difference in the awareness of their expression between the conditions in which subjects experienced an expressed emotion and did not feel an expressed emotion. That is, it was only when females did not feel the target emotion that there was a strongly significant correlation between their perception of their success in communicating the target emotion and their actual success. This finding, in particular, provides a novel contribution to the literature on sex differences in the dissimulation of emotion.

Fourth Study

As is evident from the literature, there is no agreement among researchers about the effects of concealing the expression of a felt emotion on the experience of that emotion. Studying the impact of suppressing the expression of different emotions in different contexts may suggest an explanation for this lack of agreement. The first study examined the impacts of suppressing sadness and happiness on the experience of those emotions; complementarily, this study aims to investigate the effects of concealing other basic emotions.

The concern of this study was to investigate the effects of suppressing the expression of fear, disgust and surprise, on subjective emotional experience. Furthermore, as mentioned earlier, it was necessary to take into account the intensity of emotion, as well as the subjects' perception of their success in suppressing expression, in order to obtain accurate results.

The data were collected both while silently watching films containing the emotional stimuli and while talking afterwards. In further analysis, observers' judgements about the emotions felt by the subjects were considered.

Method

Subjects: A total of 36 students, 16 females and 20 males, participated in this study. They were selected from a list available in the Psychology Department of students who would consider volunteering for psychological experiments.

Stimuli: Twelve segments of film (four for each emotion) were selected, in order to arouse fear, disgust and surprise in subjects. The four frightening film clips depicted: a cruel ugly man with a red-hot iron rod threatening to burn the face of a terrified beautiful girl; a horrible ghost pursuing a terrified and screaming young girl through an old, dark, labyrinthine building; a man followed by another man with a gun onto the sloping roof of a tall building, who loses his balance and is seen hanging with one hand from an unstable rod; frightened people running screaming from the sea, after seeing a shark attack a swimming girl. The four disgusting film clips depicted: an infected arm, covered with dirt and blood, being amputated; a man vomiting very smelly food in a disgusting way; worms coming out of a human mouth; a guest having to eat snake, while obviously very revolted. The four surprising films depicted: a man unexpectedly jumping from behind trees among a group of people who were talking about their disappointment in not finding him; a girl walking in a house, accosted by strange hands which come out from behind every corner; a girl climbing a mountain stopped to have a rest, when suddenly a strange face appeared from a narrow cave; a boy reading a book who is surprised when a person suddenly jumps through the window.

Procedure: The fourth study is complementary to the first study, therefore, the procedure was similar to the procedure of the first study, with the exception that different film segments were used as the stimuli. Also there was no neutral film segment between the different types of emotional films. The reason for not having the neutral film was that the differences between films were not as extreme, as it was between sad (negative) films and happy (positive) films in the first experiment.

As mentioned earlier, in this study the suppression of three emotions: fear, disgust and surprise was considered. For each emotion subjects viewed four film clips. In two of these segments subjects expressed their feelings frankly, either during watching films or during talking promptly after films. For the other two segments they suppressed their expression and expressed a neutral state.

The order of the red questionnaire (honest response) and the black questionnaire was different for each emotion. But at the beginning of the experiment all subjects started with an honest response.

In the present study, as in first study, the degree of intensity of felt emotion, the degree of subjects' reported success in suppressing their feelings, the frequency with which subjects felt the expressed emotions, as well as the interviewers' judgement of the subjects' emotions, were considered as dependent measures. On the other hand, the periods of silently watching the film stimuli and talking afterward, sex of subjects, and the emotions of fear, disgust and surprise, were independent variables.

Results

The intensity of emotion during honest responses was compared to that during suppression of emotion in order to clarify what effects the suppression of target emotions had on the intensity of emotion. A one way analysis of variance was used for this comparison. The factor was: type of response (honest or deceptive). The result of this analysis revealed that, in response to frightening films, the difference in intensity between honestly expressed fear and suppressed fear was not significant. But there was a tendency for honestly expressed fear to be felt more intensely than suppressed fear, for females, while silently watching films. In other words, it may be that females felt fear more intensely during the frank expression of fear in the condition of silently watching films than during the suppression of fear, but the result is not significant ($P=.06$). Further, no significant results were obtained regarding the difference in intensity between honestly expressed disgust and suppressed disgust, particularly for males. For females there was a tendency to experience disgust more intensely when talking about disgusting films frankly but again the obtained result is not significant ($P=.1$), see Table 30.

For the surprising films, not enough data were obtained, particularly in the talking period; for this reason the data could not be analysed in the talking condition, nor for females and males separately in the silent condition. In contrast to the cases of fear and disgust, there was a tendency for suppressed surprise to be felt more intensely than frankly expressed surprise, for subjects, when data obtained from females and males were considered

together, and the condition was either silently watching film or in general (total silent and talking conditions), but the results are not significant (P=.1).

However further study is needed to confirm these non significant, but interesting, finding.

Emotion	Gender	Silence		Talk		Silence & talk	
		mean	P	mean	P	mean	P
Fear	Female	5.85 h	.06	3.70 h	ns	5.10 h	.07
		4.70 d		3.31 d		4.15 d	
	Male	4.0 h	ns	3.22 h	ns	3.73 h	ns
		3.88 d		2.61 d		3.67	
	F & M	5.04 h	ns	3.50 h	ns	4.51 h	ns
		4.24 d		3.11 d		3.92 d	
Disgust	Female	7.20 h	ns	7.43 h	.1	7.29 h	ns
		7.34 d		6.0 d		6.74 d	
	Male	4.55 h	ns	3.69 h	ns	4.21 h	ns
		4.48 d		3.91 d		4.33 d	
	F & M	5.84 h	ns	5.0 h	ns	5.26 h	ns
		5.90 d		5.3 d		5.75 d	
Surprise	Female	not enough data					
	Male	not enough data					
	F & M	2.57 h	ns	not enough data		2.57 h	.1
		3.61 d				3.83 d	

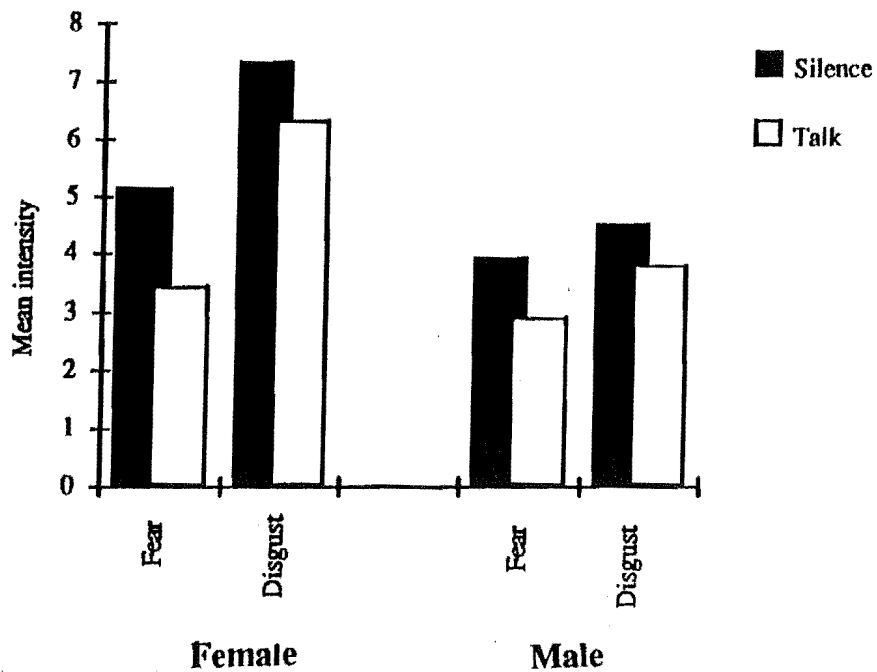
Table 30. comparison between emotional intensity in honest and deceptive.

Note: h= honest, d= deceptive, (see Table 30 in Appendices for details)

Further analyses were performed comparing the intensities of emotions when silently watching films and when talking afterwards, as well as the degree of subjects' success in suppression of the emotions of fear and disgust, in the

condition that the subjects did not feel neutral. Table 31 shows the results of this analysis. No further analyses were conducted regarding the surprising films, because as mentioned above the data were insufficient to obtain reliable results.

Figure 19 a comparison between mean intensity during silence and talking periods, for males and females, during entire of experiment.



Emotion	Gender	Intensity		Success	
		mean	p	mean	p
Fear	Female	5.15 s	***	6.50 s	ns
		3.45 t		5.23 t	
	Male	3.91 s	ns	6.80 s	ns
		2.9 t		5.20 t	
	F & M	4.52 s	**	6.87 s	*
		3.27 t		5.20 t	
Disgust	Female	7.31 s	*	6.0 s	ns
		6.32 t		5.12 t	
	Male	4.51 s	ns	6.32 s	**
		3.79 t		4.33 t	
	F & M	5.81 s	ns	6.15 s	**
		5.22 t		4.86 t	

Table 31. Showing the comparison between silence and talking periods, regarding the degree of emotional intensity as well as the degree of success in expression.

Note: s = silence; t= talking & * = $P \leq .05$; ** = $P \leq .01$ *** = $P \leq .001$, (see Table 31 in appendices for details)

In response to the frightening films, subjects (females and males combined) reported experiencing fear more intensely during silence than talking, while they had more success in suppressing the expression of fear during silence than talking. When the sexes were considered separately, this result remained significant only for females' intensity. In response to the disgusting films also, there was a tendency to experience disgust more intensely during silence than talking, but again the significant result was found only for females (see Table 31). However, subjects (females and males combined) reported having

more success during silence than talking, but this result remained significant for males only during disgusting films, when the data for the sexes were analysed separately.

In further analysis, the intensity of females' emotions, as well as the degree of their success in suppressing the target emotions, were compared to the males'. It was found that females experienced emotion with greater intensity than males, but the result was statistically significant only for disgusting films.

Figure 20 showing a comparison between females and males, regarding the degree of intensity of emotion and Ss' success in suppression of expression, during SILENCE.

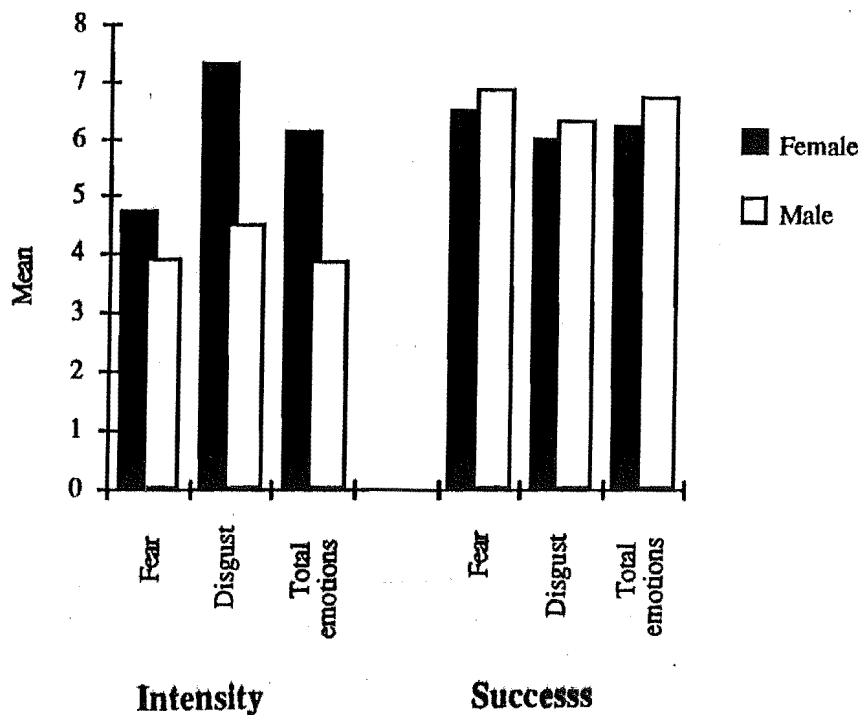
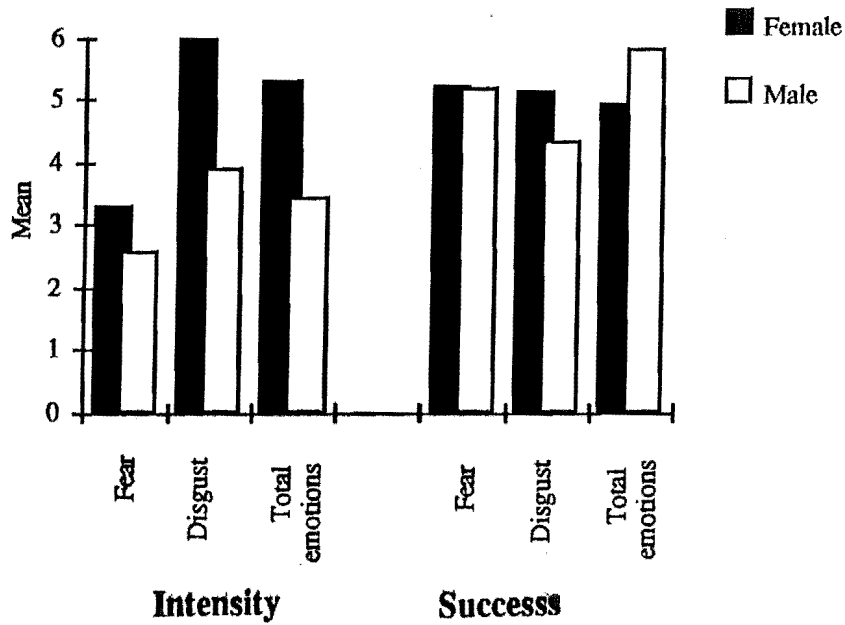


Table 21. showing a comparison between females and males, regarding the degree of intensity of emotion and Ss' success in suppression of expression, during TALKING.



An interesting outcome of this analysis , although it is not emphatically upheld by the data but it is worthwhile for further study. Males reported having more success in suppressing emotions during silence, while females reported having greater success during talking. The result was only statistically significant in the most general case which disregarded the type of stimuli (total of frightening, disgusting and surprising films).

However the mean of intensity and mean of success in the condition that the subject did not feel the expressed emotion, whether it be fear or disgust (Table 31), was slightly different from the corresponding mean when it was not considered whether the subject felt the expressed emotion (Table 32).

		Silence		Talk		Silence & talk	
		mean	P	mean	P	mean	P
Fear	Intensity	4.70 f 3.88 m	ns	3.31 f 2.58 m	ns	4.12 f 3.7 m	ns
	Success	6.50 f 6.84 m	ns	5.23 f 5.20 m	ns	6.10 f 6.59 m	ns
Disgust	Intensity	7.33 f 4.54 m	***	6.0 f 3.91 m	**	6.74 f 4.30 m	***
	Success	6.01 f 6.32 m	ns	5.12 f 4.33 m	ns	5.60 f 5.68 m	ns
Total emotions	Intensity	6.13 f 3.78 m	***	5.31 f 3.42 m	***	5.78 f 3.71 m	***
	Success	6.24 f 7.69 m	ns	5.84 f 4.94 m	*	6.35 f 5.67 m	*

Table 32. Showing the comparison between females and males, regarding the degree of emotional intensity as well as the degree of success in expression, in the condition of concealing the expression.

Note: f = female, m = male and * = $P \leq .05$; ** = $P \leq .01$; *** = $P \leq .001$
(see Table 32 in Appendices for details)

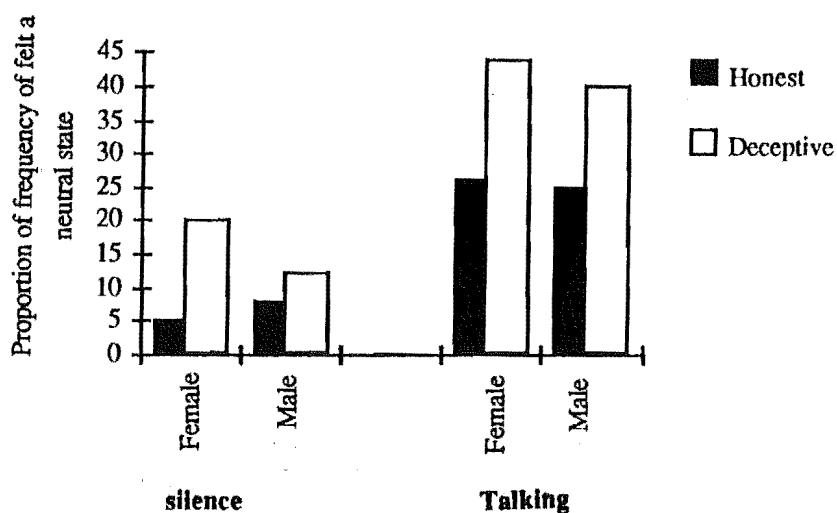
Moreover, honest expression was compared to deceptive responses, regardless of the type of stimuli, in order to find the effects of suppression on feeling. The X^2 test was used in this comparison, and the results are presented in Table 33.

Gender	Silence		Talk		Silence & talk	
	X ²	P	X ²	P	X ²	P
Female	8.56	.003	3.72	.05	11.70	.0006
Male	0.68	.4	4.48	.03	4.28	.04
female & male	8.15	.004	9.31	.002	16.54	.0001

Table 33. showing the comparison between honest and deceptive responses, regarding the effects of expression on feeling.

As is evident from Table 33, both males and females, in the talking condition, reported that they experienced a neutral emotional state more often during suppression of their expression than during honest expression. In the silent condition, the same result is found with statistical significance for females and for combined females and males, but not for males (see Figure 22).

Figure 22 a comparison between the proportion of frequency with which Ss experienced a neutral state during honest and suppression of expression, in the periods of silence and talking.



Further analysis was conducted on the association between subjects' perception of their success in concealing their emotion, and observers' judgement of subjects' felt emotion. In this analysis the correlation coefficient was used see Table 34.

Emotions	Gender	Silence		Talk	
		R	P	R	P
Fear	Female	.008	ns	.76	**
	Male	.001	ns	.92	*
	F & M	.005	ns	.76	***
Disgust	Female	.25	ns	.50	**
	Male	.37	.1	.14	ns
	F & M	.28	.06	.35	*
Total emotions	Female	.15	ns	.45	**
	Male	.133	ns	.27	.06
	F & M	.139	.09	.15	.1

Table 34. showing the correlation between subjects' perception of their success, in suppression of emotion, and observers' judgment of felt emotion.

Note: * = $P \leq 0.05$; ** = $P \leq 0.01$; *** = $P \leq 0.001$. (see Table 34 in Appendices for details)

The results show that during the talking period there was a positive correlation between females' report of their success in the suppression of the emotions of fear and disgust, and actual success as observed by interviewers. During silently watching frightening films, no significant results were found for either males or females, and during watching disgusting films again no reliable

results were found for females, and for males the result is not significant
($P=.1$).

Discussion

It may be that in some contexts the suppression of feeling has a greater effect on the intensity of females' felt emotion than males'. Also, for females, the conditions of silence and talking gave different results, during the suppression of fear or disgust. It seems that concealing fear in silence decreased the intensity of emotion while this incident happened in suppressing the expression of disgust during talking. The concealing of the expression of disgust decreased the intensity of disgust during talking. Males did not report any differences between frank expression and suppression of emotions, in the intensity of emotion. However, these results are not significant, and no claim is made here of their validity.

The shortage of data relating to surprise felt while talking after viewing the surprising films is probably due to the brevity of the normal experience of surprise; that is, by the time the film clip had finished and the subject began to speak, the feeling of surprise had subsided. Also it may be that talking about a past surprising event does not rekindle a feeling of surprise as with some other emotions. However, suppression of feelings of surprise may lead to an increase in the intensity of emotion (in contrast to the suppression of some of the other target emotions in some contexts e.g., fear in silence for females and sadness in conversation for males). Although these results are not significant, they suggest interesting differences among emotions and are worthwhile issue for further study.

Moreover the result of this study shows that the difference between silently watching films and talking afterwards about films, regarding the degree of intensity of emotion, is more obvious for females than males. A highly significant difference found for females revealed that females experienced emotions more intensely during watching the films, but no significant difference was found for males' intensity between the periods of silence and talking.

The finding of the tendency to have greater success in concealing emotions during silently watching films than during talking is corroborated by the first study. Moreover, taking the results of this study with those of the first study, the tendency of females to experience emotion with greater intensity in some contexts supports researchers (e.g., Gove, 1972, 1978; Gove & Tuder, 1973) who claim that females experience negative emotions more intensely than males. Furthermore, during the talking periods both females and males felt a neutral state more often when they concealed their expression than when they expressed their feelings frankly. Although this result also held during silence, it was not significant for males. This lack of significance for males is not supported by the first study, where males were found to feel a neutral state during the suppression of their expression more often than during the frank expression of their feeling during watching sad films.

Further results suggest, that during talking about either disgusting or fearful films females were aware of their expressions. In contrast, during watching films, only males responding to the disgusting stimuli tended to be aware of their expressions (but not significantly). Although this result is not significant, it is corroborated by the first, second and third studies. Hence, results regarding awareness of expression were more often found to be

significant for males. However, as mentioned earlier, one cannot claim this finding to be established while there remains an inevitable methodological problem in the association between decoding and encoding.

General Discussion

The results of these four studies taken together demonstrate that context has important effects on emotional dissimulation. For example, the results found for the combined conditions of silently watching films and talking differed to the results found for the specific cases of silence and talking. Similar differences occur across the sex of subjects or the type of stimuli. For instance, the result from the first study showing that during concealing happiness, males' intensity of emotion was greater than females' intensity while, females' experienced emotion with greater intensity in suppression of sadness, in combined conditions of silence and talking. But these results were reliable only during concealing happiness in silence and sadness during talking, (Table 3. Study 1)

Therefore one cannot claim that suppression of expression leads to an increase in the intensity of emotion in general. However, it may be that the suppression of expression during silence increases the intensity of emotion for females, because this was observed more often for females than males. Clearly more study is necessary to determine which emotions, when concealed by whom and under what conditions, are increased (or decreased) in intensity. Furthermore the obtained results support the hypothesis that discrepancies among experimental settings would cause inconsistent findings in the literature.

Over the whole investigation (regardless of whether subjects felt or did not feel the expressed target emotions), the intensity of emotion during silence was

often greater than during talking. But it is interesting that, frequently, the intensity of emotion felt during silently watching films did not differ from that felt during talking afterwards, when subjects felt the expressed target emotions.

Also, consistent with the findings of some other researchers (e.g., Allen & Hansher, 1974; Allen & Haccourt, 1976; Diener, Sandvik & Larsen, 1985; Grossman and Wood, 1993), the results of the present studies show that females frequently experienced emotion more intensely than males. A possible explanation for this finding is that, on the one hand, there is a wealth of evidence showing that females are more expressive than males (e.g., Wagner, Lewis, 1992); and, on other hand, Mendolia and Kleck (1993) found that spoken words and expressive actions can change the felt emotion. Therefore it may be that females experience emotions more intensely than males, because they behave more expressively than males. Also, as mentioned earlier, some researchers (e.g., Allport, 1924) have claimed that females are more personal in their expression of emotion than males, and other researchers (e.g., Beck, 1976; Fujita, Diener, Sadvik, 1991) demonstrated that people with high affect intensity use cognitive operations in a more personalized way, and interpret events in a self-referential manner. Combining these claims provides a good alternative explanation for females experiencing emotion more intensely than males.

Furthermore, throughout the four studies, subjects frequently reported having more success in expressing the required emotion during silence than during talking, and more often felt the expressed emotion during talking than during silence. The interpretation of the association among the degree of subjects' success in expression, the intensity of emotion, and whether subjects felt the

target emotions, is not straightforward; more study is needed to determine the nature of the association between them. However, the difference between silence and talking is certain. During silence, subjects' expressions were non-verbal only, and also they were currently exposed to the stimuli (films), while during talking they expressed their emotions verbally in addition to non-verbally, and were no longer exposed to the stimuli. At this point, regarding this issue, the only outcome obtained from the four studies is that when subjects felt they had communicated an emotion, that emotion was felt with the same intensity during silently watching the film and during talking afterwards; in most conditions of the experiments.

The most interesting aspect of the investigation was the tendency for the expression of an unfeared emotion to produce feelings of that emotion. Although the results are not statistically significant in each relevant comparison, in most conditions throughout the four studies, the expression of an unfeared emotion altered the subject's emotional experience. However, this effect was different in different contexts and for different emotions. For example, expressing anger for sadness, or expressing a neutral emotional state for happiness, caused feelings of these two emotions (anger and neutrality) more frequently than for some other emotions. Furthermore, in this regard, there is a greater similarity between some emotions, in special contexts, than others. For instance, disgust and fear are similar, as regards the task of masking them with an expression of sadness.

The results of studies by some researchers (e.g., Ekman, Roper & Hager, 1980; Levenson, Ekman & Friesen, 1990) demonstrating that the facial muscular configuration used in expressing some emotions are more difficult to control voluntarily than others (for instance, it may be that it is more difficult to

change all required facial muscles for expressing fear than changing some of the other muscles that are necessary for expressing other emotions) may provide an explanation for differences found among emotions in this regard, if one accepts the theory of researchers (e.g., Duncan & Laird, 1977, 1980; Ekman, Levenson & Friesen, 1983; Levenson, Ekman & Friesen, 1990) who claim that changing the facial muscular arrangement as if to express an emotion would lead to an experience of that emotion. Although this is a reasonable explanation for differences found among emotions, the subjects' reports of their success in expressing the target emotions cast some doubt on it. An interesting issue, on which the present studies did not focus, is whether a frequently expressed emotion could leave a permanent imprint on the face (Darwin, 1872). Another is whether the facial muscular arrangement used to express an emotion can cause the experience of that emotion. If these widely-held beliefs were both correct, then a person would eventually come to feel one particular emotion continuously, which is not reasonable. It may be worthwhile to find an explanation for this matter in further study.

Limitation: Although it was attempted to eliminate methodological problems which can exist in empirical studies on emotion, the present studies are not beyond criticism; this is perhaps in part because, as Davidson (1992) believed, many different behavioral and mental processes contribute to emotion. For example, regarding the differences found among emotions, it may be that the context of expression or suppression for different emotions was different, since the discrepancy between felt and communicated emotions is not the same for each emotion. Clearly the expression of one emotion is more acceptable, even if it is not actually felt, while the expression of another is not acceptable, and people may try to suppress it. In other words, it may be

that people felt uncomfortable having and expressing one emotion in one condition (e.g., happiness in a sad context) whereas the lack of another emotion is not approved (e.g., sadness in response to a disaster). Therefore, people may be particularly experienced in pretending a certain emotion while concealing a certain other emotion. For this reason it may be that the task of hiding sadness differed from that of hiding happiness. Also, subjects may have felt more uncomfortable when asked to describe the disaster incident of the film stimuli while convincing their partners that they were not sad.

Another factor which may have limited the results of these studies is the fact that, although on arrival it was confirmed that partners did not know each other, it was not possible to control the interactional differences among the pairs of partners throughout the studies. This may have affected the type of subjects' expressions, since Wagner, Lewis and Ramsay (1992) found that the degree to which one expresses an emotion depends upon the company present.

Furthermore, although it was attempted to select the person as subject who seemed to be in a neutral mood prior to the experiment, in view of the finding (Niedenthal, Kitayama, 1994) that a person in a positive mood failed to recognize negative traits to which she/he had been exposed and vice versa, still one cannot be sure that subjects did not change their neutral moods, and a positive or negative mood did not affect the recognition of stimuli throughout the entire experiment. For example, in the condition that subjects expressed anger for happiness, one cannot say with confidence that subjects recognized the positive traits of the stimuli, even though the reliability of the stimuli was confirmed in prior studies. Moreover the lack of analysis on individual differences may also have some effects on the results obtained.

Conclusion: The results of the present studies, in agreement with Levenson, Ekman and Friesen (1990), suggest that reform may be necessary in the views of some researchers (e.g., Hillman, 1960), who claim that the experience of emotion is passive, and people cannot intentionally choose which emotion to experience in a given situation. However, as mentioned earlier, the process of expressing one emotion while feeling another is too complicated to be easily generalized and clearly more study is needed to clarify some of the novel findings of these four studies. In sum, the results demonstrate clear specific effects of context on experiencing the expressed emotion. Evidently, it is a worthwhile direction of study, since one can change all of one's emotional life by understanding when and under which conditions one can change one's emotion.

Moreover, accepting the view that expressive behavior changes subjective emotional experience should lead us to modify the meaning of deception and to change some aspects of the theory of deception. Perhaps some current concepts of deception are completely spurious. It is possible that liars believe their lies, or feel the emotion that they express, so that the behavior is not deceptive. This point seems to be overlooked by many researchers; for instance, those working on the theories of "leakage" and "cues" in deception, who take an overly simplistic approach to determining when the expression is and is not deceptive.

Also this claim (the effects of expression on feeling) may provide an alternative explanation for the view that people often cannot tell when another person is lying.

Furthermore, it may be that females' ability in either decoding of the observed expression in others, or awareness of their own expression, varies between honest expression (when the emotion expressed is really felt) and deceptive expression (when the emotion expressed is not really felt).

Finally, the obtained results support researchers (e.g., Levenson, 1992; King, Drollett, 1954; Schachter, 1957) who claim specificity for each emotion, and believe that each emotion is different from the others. Clearly the difference between each emotion and the others is not the same across all emotions, and there is more similarity between some of them, in some contexts, than others, but more studies are needed to explore this.

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Appendix 1

Prior experiment questionnaire

Please be honest in answering the following questions. Your answer is very important to the results of our experiment.

Age..... Sex.....

What is your mood today?

a- Happy b- Sad c- Neutral

Is this because of

a- A recent event. b- It is your usual mood.

So much thanks for your co-operation

Appendix 1 continued
Prior experiment questionnaire

Please choose from the listed below the emotion which you felt (not necessarily the emotion which you believe you were supposed to feel).

a-Disgust, b-Surprise, c- Sadness, d- happiness, e- Anger, f- Fear, g-mixture of different emotions, h- None of them.

P1	P2	P3	P4	P5	P6	P7.....
P8	P9	P10	P11	P12	P13.....	P14.....
P15.....	P16.....	P17	P18.....	P19	P20.....	P21.....
P22	P23	P24	P25	P26	P27.....	P28.....
P29.....	P30.....	P31	P32.....	P33	P34.....	P35.....
P36	P37	P38	P39	P40	P41.....	P42.....
P43.....	P44.....	P45	P46.....	P47.....	P48.....	P49.....
P50	P51	P52.....	P53	P54	P55.....	P56.....
P57.....	P58.....	P59	P60.....	P61	P62.....	P63.....
P64	P65	P66	P67	P68	P69.....	P70.....
P71.....	P72.....	P73	P74.....	P75	P76.....	P77.....
P78	P79	P80	P81	P82	P83.....	P84.....

The intensity of the emotion was:

a- Very high, b- High, c- Mild, d- Weak, e- Very weak.

P1	P2	P3	P4	P5	P6	P7.....
P8	P9	P10	P11	P12	P13.....	P14.....
P15.....	P16.....	P17	P18.....	P19	P20.....	P21.....
P22	P23	P24	P25	P26	P27.....	P28.....
P29.....	P30.....	P31	P32.....	P33	P34.....	P35.....
P36	P37	P38	P39	P40	P41.....	P42.....
P43.....	P44.....	P45	P46.....	P47.....	P48.....	P49.....
P50	P51	P52.....	P53	P54	P55.....	P56.....
P57.....	P58.....	P59	P60.....	P61	P62.....	P63.....
P64	P65	P66	P67	P68	P69.....	P70.....
P71.....	P72.....	P73	P74.....	P75	P76.....	P77.....
P78	P79	P80	P81	P82	P83.....	P84.....

Do you think that your contemporaries would feel the same emotion that you felt when watching the film?

a- Yes, b- No, c- unsure

P1	P2	P3	P4	P5	P6	P7.....
P8	P9	P10	P11	P12	P13.....	P14.....
P15.....	P16.....	P17	P18.....	P19	P20.....	P21.....
P22	P23	P24	P25	P26	P27.....	P28.....
P29.....	P30.....	P31	P32.....	P33	P34.....	P35.....
P36	P37	P38	P39	P40	P41.....	P42.....
P43.....	P44.....	P45	P46.....	P47.....	P48.....	P49.....
P50	P51	P52.....	P53	P54	P55.....	P56.....
P57.....	P58.....	P59	P60.....	P61	P62.....	P63.....
P64	P65	P66	P67	P68	P69.....	P70.....
P71.....	P72.....	P73	P74.....	P75	P76.....	P77.....
P78	P79	P80	P81	P82	P83.....	P84.....

Appendix 2

List of the suggested questions for interviewers

- 1- Why do you think this film affected you in this way? What is the point ? Could you please convince me that this film can arouse this emotion.
- 2- what kind of feelings are you having right now ?
- 3- what kind of mood does the film create ?
- 4- Are you really telling me the truth ?
- 5- do you think I believe you ?

Appendix 3

Interviewers' instruction

In this experiment your partner will watch eleven segments of the films that are supposed to arouse emotion in him/her and you will judge about his/her emotion.

What I would like you to do today is to be honest and follow the instructions very carefully, please, because the results of our experiment depends upon your honesty and your co-operation.

- 1- Encourage your partner to describe the film as soon as he/she turns off the TV
- 2- Ask your partner 3 questions from the suggested questions in your own words, without changing the meaning of the questions.
- 3- Please don't try to change the subject's emotion or arouse another emotion in him/her through your communication. Imagine that you are out of the experimental room and are having a normal conversation with your partner.
- 4- Fill in the questionnaire after finishing the conversation about each segment.
- 5- In your judgment *don't try to rely only on the subject's report about his/her feeling or on the type of the film that is supposed to arouse special emotion in her/him.* It is not necessary that the same type of film arouse similar emotions in two different people. For example, a happy film can arouse sadness in a person because he/she has a specific which is related to this film.

Appendix 4

Questionnaire for interviewees to report subjects' response

Please write the emotion (or emotions) with the degree of intensity that you think your partner experienced during **watching the film** (Rate his/her feeling with the category 0 "no feeling at all" to 9 "extremely strong")

- 1- At the beginning.....in the middle.....at the end.....
- 2- At the beginning.....in the middle.....at the end.....
- 3- At the beginning.....in the middle.....at the end.....
- 4- At the beginning.....in the middle.....at the end.....
- 5- At the beginning.....in the middle.....at the end.....
- 6- At the beginning.....in the middle.....at the end.....
- 7- At the beginning.....in the middle.....at the end.....
- 8- At the beginning.....in the middle.....at the end.....
- 9- At the beginning.....in the middle.....at the end.....
- 10- At the beginning.....in the middle.....at the end.....
- 11- At the beginning.....in the middle.....at the end.....

Please write the emotion (or emotions) with the degree of intensity that you think your partner experienced during **conversation** (Rate his/her feeling with the category 0 "no feeling at all" to 9 "extremely strong")

- 1- At the beginning.....in the middle.....at the end.....
- 2- At the beginning.....in the middle.....at the end.....
- 3- At the beginning.....in the middle.....at the end.....
- 4- At the beginning.....in the middle.....at the end.....
- 5- At the beginning.....in the middle.....at the end.....
- 6- At the beginning.....in the middle.....at the end.....
- 7- At the beginning.....in the middle.....at the end.....
- 8- At the beginning.....in the middle.....at the end.....
- 9- At the beginning.....in the middle.....at the end.....
- 10- At the beginning.....in the middle.....at the end.....
- 11- At the beginning.....in the middle.....at the end.....

Appendix 5

Subjects' Instruction for first and fourth studies

What I would like you to do today is to be honest and follow the instructions very carefully *please* because the result of our experiment depends your honesty and your co-operation.

This experiment has several steps, the most important difference between the sessions is to show honest responses or deceptive responses to the film that you are going to watch.

In some parts watch the film and express your natural feeling *sincerely*. (**feel the emotion that film arouse in you and express it**) Convince your partner about your feeling with a short description of what you watched and answer his/her questions, then fill in the questionnaire.

In the other parts, Please imagine that you are really in the situation of the shown in the film and try to experience the emotion that you think that film is supposed to arouse in you, but don't express it (**feel the emotion but suppress the expression**). At the end of the film, there is a short gaph after each film segment, you should turn off the TV and start to describe the film to your partner, try emphasise the event that aroused emotion in you and answer her/his questions. Then fill in the questionnaire. Start the next part after two minutes break.

(Please try for the duration of your conversation *to feel* the emotion that the film aroused in you *and hide* your feeling in such a way that obsevers can not understand what you are really feeling. Pretend you are feeling quite neutral).

When you have to hide the emotion that the film was supposed to arouse in you even though it did not then be honest and express your neutral feeling.

At the time (not before please) you decide to turn on the TV again and start to watch a new session look at the colour of the sign at top of the questionnaire if the colour is **RED** it shows , it is the time that you will express your **HONEST response** and if it is **BLACK** you will *conceal* your feeling.

Appendix 6

Questionnaire for subjects' report in honest response

1- what emotion or emotions with which degree of intensity did you really experience during **watching the film** ? (Rate your feeling with the category 0 "no feeling at all" to 9 "extremely strong").

a- At the beginning the emotion.....with the degree of intensity.....

b- In the middle the emotion.....with the degree of intensity.....

c- At the end the emotion.....with the degree of intensity.....

2- what emotion or emotions with which degree of intensity did you really experience during **conversation** with your partner ? (Rate your feeling with the category 0 "no feeling at all" to 9 "extremely strong").

a- At the beginning the emotion.....with the degree of intensity.....

b- In the middle the emotion.....with the degree of intensity.....

c- At the end the emotion.....with the degree of intensity.....

Appendix 7

Questionnaire for subjects' report in deceptive response

1- what emotion or emotions with which degree of intensity did you really experience during **watching the film** ? (Rate your feeling with the category 0 "no feeling at all" to 9 "extremely strong").

a- At the beginning the emotion.....with the degree of intensity.....

b- In the middle the emotion.....with the degree of intensity.....

c- At the end the emotion.....with the degree of intensity.....

2- what emotion or emotions with which degree of intensity did you really experience during **conversation** with your partner ? (Rate your feeling with the category 0 "no feeling at all" to 9 "extremely strong").

a- At the beginning the emotion.....with the degree of intensity.....

b- In the middle the emotion.....with the degree of intensity.....

c- At the end the emotion.....with the degree of intensity.....

How much do you think you were successful in concealing your emotion. (Rate the degree of your success with the category 0 "not at all" to "10 " completely successful").

a- During **watching the film**:

i- At the beginning.....ii- In the middle.....iii- At the end.....

b- During **conversation**:

i- At the beginning.....ii- In the middle.....iii- At the end.....

Appendix 8

Research Participants wanted

I need some volunteers (age 18-21) to help running one experiment in Psychology Department. We do not pay now! but you can learn something about your ability, it is fun to do this experiment.

If you are interested please write your name and your phone number and I will contact you.

Thanks for your co operation.

Name	Telephone	Name	Telephone

Appendix 9

Subjects' instruction in the second and third studies

In this experiment you will watch ten segments of films that are supposed to arouse emotions in you.

What I would like you to do today is to be honest and follow the instructions very carefully, *please*, because the results of our experiment depends upon your honesty and your co-operation.

- 1- Before turning on the T.V. look at the type of the emotion listed at the top of your questionnaire. This shows what emotion you are going to express to your partner despite the emotion which the film arouses in you. Substitute your ,feeling with this emotion only in apperance.
- 2- Turn on the TV. After watching each segment turn the TV off again. After each segment there is a short gap.
- 3- Describe the film to your partner promptly and try to emphasis the event (or view) which aroused emotion in you. You must hide your real feelings, and pretend that this film aroused the requested emotion.
- 4- After your description of the film, your partner will ask you a few questions about the film and your feeling about it. Please answer his/her questions by pretending you have and felt the requested emotion.
- 5- Fill in the questionnaire after you finish your conversation with your partner.
- 6- Start the next part after two minutes break.

Please try for the entire period while watching the film and in conversation with your partner to feel emotion that the film is supposed to arouse in you and, hide your real feeling. Instead express the emotion that has been suggested to you and try to convince your partner that you are feeling the requested emotion.

Table 1 (First Study)

Emotion	gender	Silence			Talk			Silence & Talk.				
		honest vs deceptive	mean	F or t	p	honest vs deceptive	mean	F or t	p	honest vs deceptive	mean	F or t
Sad	female	4.68 h	F = .16	.7	3.98 h	F = .06	.8	4.21 h	F = .002	.96	4.83 d	4.22 d
		4.83 h			3.69 d			4.11 h			F = 2.6	.11
	male	4.83 h	F = 1.2	.3	3.69 h	F = 2.66	.05	4.11 h	F = 2.6	.11	4.24 d	3.46 d
totals f & m		4.73 h	F = .13	.7	3.67 h	2.14	.13	4.18 h	F = .9	.34	4.62 d	3.96 d
		4.62 d			3.36 d			3.96 d				
Happy	female	4.42 h	F = 2.6	.05	4.11 h	F = .01	.9	4.37 h	F = 1.36	.24	5.28 d	4.67 d
		5.28 d			4.15 d			4.67 d			F = 1.36	.24
	male	5.49 h	F = 1.4	.2	4.83 h	F = .19	.7	5.16 h	F = .16	.68	5.93 d	5.29 d
totals f & m		4.81 h	t = 2	.05	4.37 h	t = .07	.8	4.65 h	t = 1.15	.25	4.81 h	4.88 d
		5.54 d			4.31 d			4.88 d				
Sad+ Happy	female	4.65 h	t = 1.49	.14	3.95 h	t = .03	.98	4.29 h	t = .95	.34	5.03 d	4.47 d
		5.03 d			3.94 d			4.47 d			t = .95	.34
	male	5.2 h	t = 0.04	.97	4.20 h	t = 1.14	.26	4.69 h	t = .77	.44	5.19 d	4.49 d
totals f & m		4.84 h	t = 1.22	.2	4.04 h	t = .72	.47	4.43 h	F = .09	.76	4.84 h	4.48 d
		5.09 d			3.88 d			4.48 d				

Table 1. comparison between emotional intensity in honest and deceptive responses.

Note: h = honest, d = deceptive

Table 2 (First Study)

response	gender	happy			sad			totals (sad & happy)			
		silence vs talk	mean	F or t	p	silence vs talk	mean	F or t	p	silence vs talk	mean
honest	male	5.49 s 4.83 t	t = 1.6	0.09	4.83 s 3.48 t	t = 2.3	.02	5.2 s 4.2 t	t = 2.8	.006	
	female	4.62..s 4.11..t	t = 1.6	0.1	4.69 s 3.77..t	t = 2.5	.01	4.65 s 3.95 t	t = 2.95	.004	
	tatals male female	4.93 s 4.37 t	t = 2.2	.03	4.73 s 3.67 t	t = 3.4	.001	4.84 s 4.04 t	F = 16	.0001	
deceptive	male	5.93 s 4.63 t	t = 2.97	.004	4.24 s 2.69 c	t = 3.3	.002	5.19 s 3.77 t	t = 3.93	.0001	
	female	5.18 s 4.15 t	t = 2.68	.008	4.83 s 3.69 c	t = 2.96	.004	5.03 s 3.94 t	t = 3.98	.0001	
	tatals male female	4.93 s 4.37 t	t = 2.19	.03	4.73 s 3.67 t	t = 3.4	.001	5.09 s 3.88 t	t = 5.5	.0001	
honest+ deceptive	male	5.72 s 4.73 t	t = 3.3	.001	4.52 s 3.10 t	t = 3.77	.001	5.20 s 3.99 t	t = 4.75	.0001	
	female	4.91 s 4.13 t	t = 3	.002	4.75 s 3.73 t	t = 88	.0001	4.84 s 3.95 t	t = 4.95	.0001	
	tatals male female	5.19 s 4.34 t	t = 4.32	.0001	4.67 s 3.52 t	t = 5.3	.0001	4.97 s 3.98 t	F = 45.7	.0001	

Table 2. comparison between emotional intensity in silent and talking periods.
Note: s = silence, t = talking

Table 3 (First Study)

Duration	emotion	honest male vs female			deceptive male vs female			totals male vs female		
		mean	F or t	p	mean	F or t	p	mean	F or t	p
Silence	sad	4.68 f 4.83 m	t = .31	.76	4.83 f 4.24 m	t = 1.3	.19	4.75 f 4.52 m	F= .9	.3
	happy	4.62 f 5.49 m	t = 2.4	.02	5.18 f 5.98 m	t = 1.8	.05	4.91 f 5.72 m	F= 8.4	.004
	totals sad happy	4.65 f 5.20 m	3.68	.05	5.03 f 5.19 m	t = .24	.62	4.84 f 5.20 m	F 2.8	.09
Talk	sad	3.78 f 3.48 m	t = .64	.52	3.69 f 2.69 m	t = 2.3	.03	3.73 f 3.10 m	F= 4.0	.05
	happy	4.11 f 4.83 m	t = 2.2	.05	4.15 f 4.63 m	t = 1.1	.3	4.13 f 4.73 m	F= 3.97	.048
	totals sad happy	3.95 f 4.2 m	t .85	.4	3.94 f 3.77 m	t = .52	.6	3.95 f 3.99 m	F= .2	.8
Totals	sad	4.21 f 4.11 m	t = 29	.77	4.22 f 3.47 m	t = 2.3	.02	4.21 f 3.79 m	F= 3.15	.08
	happy	4.37 f 5.16 m	t = 3	.003	4.67 f 5.29 m	t = 2	.05	4.52 f 5.22 m	F= 11.3	.0009
	totals sad & happy	4.29 f 4.69 m	F = 3.4	.06	4.47 f 4.45 m	t=.06	.95	4.39 f 4.62 m	F= 1.15	.28

Table 3. Comparison between emotional intensity for males and females.

Note f = females, m = males.

Table 4 (First Study)

duration	gender	honest sad vs happy			deceptive sad vs happy			totals sad vs happy		
		mean	F or t	p	mean	F or t	p	mean	F or t	p
silence	female	4.68 s 4.62 h	t = .16	.88	4.83 s 5.20 h	t = .98	.33	4.75 s 4.92 h	F = .4	.53
	male	4.83 s 5.49 h	t = 1.6	.11	4.24 s 6.03 h	t = 3.84	.000	4.52 s 5.76 h	F= 15.4	.0002
	totals f & m	4.73 s 4.81 h	.72	.47	4.62 s 5.49 h	t = 2.89	.004	4.67 s 5.21 h	F= 6.78	.009
Talk	female	3.77 s 4.11 h	t = 1.06	.29	3.69 s 4.19 h	t = 1.22	.22	3.73 s 4.15 h	F = 2.6	.11
	male	3.48 s 4.83 h	t = 2.46	.02	2.69 s 4.80 h	t = 4.9	.000	3.10 s 4.82 h	F = 23.6	.0001
	totals f & m	3.67 s 4.37 h	t = 2.45	.015	3.36 s 4.39 h	t = 3.29	.001	3.52 s 4.38 h	F= 16.58	.0001
silence+ Talk	female	4.21 s 4.37 h	t = .66	.51	4.22 s 4.69 h	t = 1.64	.1	4.21 s 4.53 h	F = 2.89	.09
	male	4.11 s 5.16 h	t = 2.91	.004	3.46 s 5.40 h	t = 5.7	.0001	3.79 s 5.30 h	F= 36.5	.0001
	totals f & m	4.18 s 4.65 h	t = 2.32	.02	3.96 s 4.94 h	t = 4.34	.0001	4.07 s 4.80 h	F = 33.	.0001

Table 4. Comparison between emotional intensity for sad and happy stimuli.

Note s = sad films, h = happy film

Table 5 (First Study)

Emotion	Gender	intensity vs success deceptive				intensity vs judgment deceptive				success vs judgment deceptive				intensity vs judgment honest			
		silent		convers..		silent		convers..		silent		convers..		silent		convers..	
		R	p	R	p	R	p	R	p	R	p	R	p	R	p	R	p
Happy	female	0.13	0.33	-.07	0.62	0.15	0.26	0.023	0.86	0.16	0.22	0.1	0.45	-.12	0.37	-.21	0.12
	male	-.25	0.17	-.23	0.22	0.19	0.31	0.40	*.023	-.63	*.0001	-.57	*.0009	-.20	0.28	-.41	*.02
	totals	0.04	0.71	-.14	0.19	0.21	0.056	0.15	0.17	-.42	*.0001	-.29	*.005	-.087	0.43	-.27	*.01
Sad	female	0.30	*0.05	0.08	0.57	0.103	0.51	-.099	0.49	-.108	0.49	-.053	0.71	0.069	0.64	0.10	0.30
	male	0.24	0.26	-.22	0.29	-.043	*.041	-.25	0.29	-.145	0.51	0.069	0.75	0.343	0.11	0.15	0.27
	totals	0.26	*.035	-.015	0.90	-.16	0.22	-.16	0.17	-.08	0.52	0.005	0.97	0.16	0.19	0.19	0.09
Sad & Happy	female	0.19	0.055	-.008	0.93	0.122	0.22	-.009	0.93	-.13	0.19	-.08	0.41	0.10	0.30	0.10	0.30
	male	-.12	0.38	-.35	*.009	-.19	0.18	0.16	0.25	-.39	*.004	-.34	*.01	0.15	0.27	0.15	0.27
	totals	0.05	0.57	-.12	0.13	0.01	0.91	0.05	0.56	-.26	*.001	-.19	*.013	0.08	0.34	0.12	0.12

Table 5. showing the correlation between intensity and success; intensity and judgment; and success and judgment.

Table 9 (Second Study)

	Silence		Talk		Silence & Talk	
	X ²	P	X ²	P	X ²	P
Neutral vs Disgust	.73	.5	4.1	.05*	1	.4
Neutral vs Fear	.82	.5	6.7	.01*	6.9	.01*
Neutral vs Anger	1.07	.4	.69	.5	1.5	.3
Neutral vs Happy	.82	.5	.8	.5	1.4	.3
Disgust vs Fear	3.1	.1	.41	.7	2.7	.1
Disgust vs Anger	.03	.9	8.2	.007*	5.1	.03*
Disgust vs Happy	3.1	.1	1.3	.3	.03	.9
Fear vs Anger	3.8	.09	11.97	.001*	14.8	.0002*
Fear vs Happy	0	.9	3.18	.1	2.1	.2
Anger vs Happy	3.72	.09	3.02	.1	6	.02*

Table 9. X² results and corresponding significance levels for the comparison shown in the left column, under conditions of "silence" or "talking" in addition of the total of conditions.

Table 11 (Second Study)

Emotions	Conditions	Intensity			Success		
		Mean	F	P	Mean	F	P
Neutral	Silence	3.89	1.55	.23	8.2	1.82	.19
	Talk	2.5			7.2		
Disgust	Silence	5.69	.42	.5	6.46	1.61	.22
	Talk	5.2			5.53		
Fear	Silence	4.33	.11	.75	4.17	2.37	.1
	Talk	3.93			6		
Anger	Silence	3.57	.65	.42	4.35	1.13	.29
	Talk	4.07			5.19		
Happy	Silence	2.83	4.16	.05*	5	.95	.34
	Talk	4.71			6		
Totals	Silence	4.2	.46	.5	5.71	.43	.5
	Talk	3.92			5.98		

Table 11. F test results and corresponding significant levels for comparison, between silence and talking periods in degree of intensity and Ss' perception of their success. (the events that Ss did not experience the expressed emotions are eliminated)

Table 12 (Second Study)

Emotions	Conditions	Intensity			Success		
		Mean	F	P	Mean	F	P
Neutral	Silence	4.88	12.41	.0006*	6.17	.03	.9
	Talk	3.36			6.10		
Disgust	Silence	4.29	2.28	.1	5.22	.65	.4
	Talk	3.65			5.53		
Fear	Silence	4.25	2.78	.09	4.08	.39	.5
	Talk	3.46			3.83		
Anger	Silence	4.35	3.66	.05*	4.5	.3	.6
	Talk	3.53			4.7		
Happy	Silence	4.83	5.82	.02*	5.83	5.88	.02*
	Talk	3.74			4.83		
Totals	Silence	4.53	23.9	.0001*	5.15	.7	.4
	Talk	3.55			4.99		

Table 12. F test results and corresponding significance levels for comparison, between silence and talking periods in degree of intensity and Ss' perception of their success. (during intire of experiment)

Table 13 (Third Study)

	Silence		Talk		Silence & Talk	
	X ²	P	X ²	P	X ²	P
Neutral vs Disgust	8.05	.008	15.18	.0002	22.81	.0001
Neutral vs Fear	22.6	.0001	16.89	.0001	37.44	.0001
Neutral vs Anger	12.1	.001	4.6	.05	14.48	.0002
Neutral vs Sad	3.3	.1	4.48	.05	7.39	.009
Disgust vs Fear	5.81	.04	.06	1	2.53	.16
Disgust vs Anger	.63	.6	3.29	.1	.98	.4
Disgust vs Sad	1.23	.4	3.96	.05	4.74	.04
Fear vs Anger	2.98	.1	4.38	.05	6.45	.02
Fear vs Sad	11.02	.002	4.66	.05	13.52	.0004
Anger vs Sad	3.46	.1	.006	.9	1.37	.3

Table 13. X² results and corresponding significance levels for the comparison shown in the left column, under conditions of "silence" or "talking" in addition of the total of conditions.

Table 15 (Third Study)

Emotions	Conditions	Intensity			Success		
		Mean	F	P	Mean	F	P
Neutral	Silence	2.45	1.57	.2	8.1	2.79	.1
	Talk	3.63			6.77		
Disgust	Silence	4.25	3.31	.09	6.4	3.97	.05
	Talk	2.81			3.61		
Fear	Silence	3.0	.08	.8	8.0	9.41	.01
	Talk	3.62			3.92		
Anger	Silence	3.01	.66	.4	4.0	1.52	.2
	Talk	4.13			5.63		
Sad	Silence	3.14	.53	.5	4.59	.15	.7
	Talk	2.61			4.92		
Totals	Silence	3.0	.64	.4	6.47	3.65	.05
	Talk	3.41			5.21		

Table 15. F test results and corresponding significance levels for comparison, between silence and talking periods in degree of intensity and Ss' perception of their success. (the events that Ss did not experience the expressed emotions are eliminated)

Table 16 (Third Study)

Emotions	Conditions	Intensity			Success		
		Mean	F	P	Mean	F	P
Neutral	Silence	4.33	.66	.4	6.23	.17	.7
	Talk	3.93			6.03		
Disgust	Silence	4.31	3.86	.05	3.99	.03	.9
	Talk	3.49			3.91		
Fear	Silence	4.79	5.3	.02	3.58	4.93	.03
	Talk	3.61			2.62		
Anger	Silence	4.94	2.24	.1	4.07	.72	.4
	Talk	4.23			3.65		
Sad	Silence	3.73	2.53	.1	4.47	3.67	.05
	Talk	3.01			3.65		
Totals	Silence	4.41	13.1	.0003	4.46	5.45	.02
	Talk	3.64			3.96		

Table 16. F test results and corresponding significance levels for comparison, between silence and talking periods in degree of intensity and Ss' perception of their success. (during intire of experiment)

Table 17 (Combined 2th & 3th Studies)

Sad Films VS Happy Films

Emotions	Silence		Talk		Silence & Talk	
	X ²	P	X ²	P	X ²	P
Neutral	5.15	.02	.48	.5	4.35	.03
Disgust	.96	.33	.77	.4	2.17	.14
Fear	3.75	.05	.22	.6	1.94	.16
Anger	3.72	.05	3.76	.05	7.4	.006
Sadness vs Happiness	2.0	.1	.02	.9	.33	.6
Totals	.02	.9	1.83	.2	1.12	.3

Table 17. The X² results and corresponding significant levels, for the comparison between sad films with happy films, regarding the effects of expression on emotional experience, for each single emotion.

Table 30 (Fourth Study)

Emotion	Gender	Silence			Talk			Silence & talk		
		mean	F	P	mean	F	P	mean	F	P
Fear	Female	5.85 h			3.70 h			5.10 h		
		4.70 d	3.4	.07	3.31 d	.34	.6	4.15 d	3.4	.07
	Male	4.0 h			3.22 h			3.73 h		
		3.88 d	.02	.9	2.61 d	.15	.7	3.67	.01	.9
	F & M	5.04 h			3.50 h			4.51 h		
		4.24 d	2.3	.13	3.11 d	.34	.6	3.92 d	1.9	.2
Disgust	Female	7.20 h			7.43 h			7.29 h		
		7.34 d	.06	.8	6.0 d	2.6	.1	6.74 d	1.1	.29
	Male	4.55 h			3.69 h			4.21 h		
		4.48 d	.01	.9	3.91 d	.06	.8	4.33 d	.03	.8
	F & M	5.84 h			5.0 h			5.26 h		
		5.90 d	1.2	.3	5.3 d	.24	.6	5.75 d	1.4	.2
Surprise	Female	not enough data								
	Male	not enough data								
	F & M	2.57 h						2.57 h		
		3.61 d	1.6	.2	not enough data			3.83 d	2.7	.1

Table 30. comparison between emotional intensity in honest and deceptive responses.

Note: h = honest, d = deceptive

Table 31 (Fourth Study)

Emotion	Gender	Intensity			Success		
		mean	F	P	mean	F	P
Fear	Female	5.15 s 3.45 t	12.7	.001	6.50 s 5.23 t	1.3	.3
	Male	3.91 s 2.9 t	1.7	.2	6.80 s 5.20 t	1.8	.2
	F & M	4.52 s 3.27 t	8.2	.005	6.87 s 5.20 t	3.8	.05
Disgust	Female	7.31 s 6.32 t	4.8	.03	6.0 s 5.12 t	1.7	.2
	Male	4.51 s 3.79 t	1.8	.2	6.32 s 4.33 t	9.8	.003
	F & M	5.81 s 5.22 t	2.1	.15	6.15 s 4.86 t	7.5	.007

Table 31. Showing the comparison between silence and talking periods, regarding the degree of emotional intensity as well as the degree of success in expression.

Note: s = silence, t = talking

Table 32 (Fourth Study)

		Silence			Talk			Silence & talk		
		mean	F	P	mean	F	P	mean	F	P
Fear	Intensity	4.70 f 3.88 m	2.1	.16	3.31 f 2.58 m	.56	.5	4.12 f 3.7 m	.96	.3
	Success	6.50 f 6.84 m	.16	.7	5.23 f 5.20 m	.04	.9	6.10 f 6.59 m	.62	.4
Disgust	Intensity	7.33 f 4.54 m	32.8	.0001	6.0 f 3.91 m	7.0	.01	6.74 f 4.30 m	31	.0001
	Success	6.01 f 6.32 m	.25	.6	5.12 f 4.33 m	1.3	.3	5.60 f 5.68 m	.02	.9
Total emotions	Intensity	6.13 f 3.78 m	56.3	.0001	5.31 f 3.42 m	24	.0001	5.78 f 3.71 m	75	.0001
	Success	6.24 f 7.69 m	1.5	.2	4.94 f 5.84 m	5.0	.03	5.67 f 6.35 m	5.9	.02

Table 32. Showing the comparison between females and males, regarding the degree of emotional intensity as well as the degree of success in expression, in the condition of concealing the expression.

Note: f = female, m = male

Table 34 (Fourth Study)

Emotions	Gender	Silence		Talk	
		R	P	R	P
Fear	Female	.008	.9	.76	.002
	Male	.001	.9	.92	.03
	female & male	.005	.9	.76	.0002
Disgust	Female	.25	.2	.50	.01
	Male	.37	.1	.14	.7
	female & male	.28	.06	.35	.05
Total emotions	Female	.15	.3	.45	.002
	Male	.133	.2	.25	.06
	female & male	.139	.09	.15	.1

Table 34. showing the correlation between subjects' perception of their success, in suppression of emotion, and observers' judgment of felt emotion.