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8 The social psychophysiology of marriage¹

JOHN M. GOTTMAN
University of Washington, Seattle.

ROBERT W. LEVENSON
University of California, Berkeley.

This chapter will make a case for the hypothesis that marital satisfaction increases or decreases, and that ultimately marriages succeed or fail over time as a function of how couples handle negative affect. Moreover, we will propose that there are distinct sex differences in the way men and women respond to negative affect in intimate relationships. We will advance the admittedly speculative hypothesis that these sex differences are socialised as a function of biologically based differences between the sexes in their reactivity to stressful events. What these sex differences are, how are they manifested, and their effects, origins, and consequences for marriage and health are the subjects of this chapter.

Marital satisfaction and negative affect

Research on the measurement of marital satisfaction has a venerable 45-year history and has produced a number of self-report instruments with good psychometric properties of reliability and validity. There have been a number of attempts to try to account for variation in self-reported marital satisfaction using measurements from other domains. Perhaps the most successful of these has been the work in the past decade employing observational methods to determine if there are behavioural differences between satisfied and dissatisfied marriages.

We now know what kinds of interaction patterns discriminate dissatis-

fied from satisfied couples; the most consistent finding has been that there is more negative affect (anger, contempt, sadness, fear, disgust, and their blends) and more reciprocity of negative affect in dissatisfied couples. These patterns have generally replicated across studies (see Gottman, 1979; Levenson & Gottman, 1983) and across research laboratories (Cousins & Vincent, 1983; Margolin & Wampold, 1981; Revenstorf, Vogel, Wegener, Hahlweg & Schindler, 1980; Schaap, 1982; Ting-Toomey, 1983), and they fit with the couples' own perceptions of their interaction (Gottman, 1979; Gottman & Levenson, 1985).

Measures of negative affect and negative affect reciprocity have proven to have considerable predictive power as well. Among married couples, these measures have been used longitudinally to predict changes in marital satisfaction over a three-year period (Levenson & Gottman, 1985). Among couples planning to marry, they have predicted change in marital satisfaction over a five-year period (Markman, 1979; 1981). Interventions specifically designed to change patterns of negative affect and negative affect reciprocity have been shown to improve marital satisfaction (Gottman, 1979; Hahlweg, Revenstorf & Schindler, 1982; Hahlweg, Revenstorf & Schindler, 1983; Jacobson, 1977, 1978).

Interview studies

Marital grievances

Reports of sex differences in what husbands and wives complain about can be found in the earliest studies of marriage. Terman, Bittenweiser, Ferguson, Johnson & Wilson (1938) reported that grievances of husbands centred on their wife's complaining, criticising, and high levels of emotionality (e.g. 'criticises me', 'nervous or emotional', 'quick tempered', 'feelings too easily hurt', 'nags me'). On the other hand, wives' grievances concerned their husbands' emotional withdrawal (e.g. 'does not talk things over', 'does not show affection'). In a similar vein, Locke (1951) found that divorced men complained of constant bickering more than did divorced women. He suggested that in unhappy marriages it is husbands who withdraw in terms of the demonstration of affection. Wives seem much more interested in working on the marital issues:

women tend to place a higher value on talking things over than do men ... moreover, divorced women reported much more frequently than divorced men that they and their spouses almost 'never' talked things over together. (p. 251)

Marital conflict

There is a great deal of conflict in unhappy marriages. Phillips (1975) found that the sheer amount of conflict per month reported by spouses in dissatisfied and satisfied marriages was dramatically different. Dissatisfied couples reported spending about 180 hours per year in conflict whereas satisfied couples reported spending about 16 hours per year in conflict. Heated conflicts were both more frequent (3 per month versus 1.3 per month) and lasted longer (5.11 hours versus 0.52 hours) for dissatisfied versus satisfied couples. These results are consistent with diary data on rates of pleasing and displeasing events in dissatisfied and satisfied couples collected by Wills, Weiss & Patterson (1974).

Self-disclosure

Komarovsky's (1962, 1976) study of 58 blue collar couples concluded that the blue collar husband is generally not emotionally expressive, not self-disclosing, and does not view his wife as a resource for talking things out. However, she did not analyse her data statistically and some of her conclusions need to be restated in terms of level of marital satisfaction. When we analysed her data (Komarovsky, 1962), we found a strong statistical relationship between marital happiness and self-disclosure for both men, $X^2(1) = 14.09$, and women, $X^2(1) = 16.25$. These results show that while blue collar husbands do not self-disclose in *unhappy* marriages they do self-disclose in *happy* marriages. Additional analyses reveal that in happy marriages there are no statistically significant differences between husbands and wives in the amount of self-disclosure.

Komarovsky's data also indicate that husbands and wives differ in the areas in which they manifest what she called 'emotional reserve'. Wives hold back most in 'personal' areas (i.e. worries about health, dissatisfactions with self, hurts, dreams and aspirations for herself and for the family, transgressions and reminiscences). Husbands, in contrast, hold back most in areas concerned with work and money (i.e. satisfactions, dissatisfactions, worries about bills, and economic concerns in general). Komarovsky's interviews revealed that husbands do not think it is 'manly' to complain about work, to bring the job home, or to worry the family.

An additional difference in disclosure is found between husbands and wives in Komarovsky's study. Wives disclose to a fairly wide support network that includes their husbands, their close female friends and their relatives. Husbands in essence disclose *only* to their wives. These data suggest that blue collar men have a smaller, more concentrated social world than their wives. In happy marriages, husbands' self-disclosure is limited to

their wives; in unhappy marriages, husbands' self-disclosure is nonexistent. This is not a picture of a male who is nonexpressive in all contexts, but rather depicts males whose degree of disclosure is highly dependent on the emotional climate of the marriage. The wives' behaviour is more consistent across contexts. Their self-disclosure in the most personal areas occurs primarily outside the marriage, regardless of the level of marital satisfaction. A similar sex difference in the size and make-up of support networks has also been reported in studies not directly concerned with marriage (e.g. House, 1981).

Withdrawal from conflict

Komarovsky (1962) noted that unhappily married men conceal their feelings, and referred to 'a striking tendency on the husbands' part to "clam up" in the face of conflict' (p.143). She wrote:

... confronted with a marriage conflict, a greater proportion of the husbands than the wives withdraw, either physically or psychologically, by such means as walking out of the house ('I say what I have to say and then I go zoom out of the house') or by silence ('I don't pay any attention until she cools off'). (p.193)

We believe that it is the intense negative affect associated with conflict that is responsible for the emotional withdrawal of men in unhappy marriages. While Komarovsky's data about the history of the marriages in her study are retrospective accounts, many of the quotes from her couples suggest that husbands were not *always* withdrawn in their marriages. For example, one wife said: 'I used to talk to him a lot when we were first married, but now I can't talk to him at all. He kinda draws away from me.' (p.138). A similar pattern of husbands' withdrawal in the face of intense negative affect has been described by Rubin (1976).

Observational studies

The studies reviewed thus far have been interview studies that did not actually observe marital interaction. If the self-report data from these studies concerning sex differences in the response to conflict are accurate, then it is reasonable to expect that the *behaviour* of husbands during marital conflict would be quite different from the behaviour of wives. There now exists a body of studies that have included actual observation of marital interaction along with systematic assessment of marital satisfaction. These studies provide the appropriate context for determining whether there

are behavioural differences between the sexes during marital conflict and whether these differences are consistent across levels of marital satisfaction.

Conflict behaviour

One of the first important observation studies was a longitudinal study conducted by Raush, Barry, Hertel & Swain (1974). The study was unique in several ways. It began by studying couples in the newlywed phase and followed them through the first pregnancy into the transition to parenthood. A novel set of improvised conflict situations was employed that varied in the amount of conflict induced. The authors also carried out the first sequential analysis of observational data of marital interaction. By sequential analysis we mean comparing the conditional likelihood that a particular consequent behaviour, C, occurs, given the occurrence of a particular antecedent behaviour, A, with the unconditional probability that the consequent behaviour occurs, regardless of antecedent. This is opposed to the more common practice of counting the overall incidence of a given behaviour without regard to what preceded it. One of the authors' goals was to determine what kinds of conflicts have a tendency to escalate beyond the issue under consideration. On theoretical grounds they proposed that symbolic images (e.g. 'manliness') are likely to escalate in this manner, as are conflicts that pertain to differences in desired closeness or intimacy.

This study found several important things. First, they discovered that there was a great deal of consistency in marital interactive style over long periods of time; couples' interactive patterns appeared to be quite stable. Second, they found that many happily married couples had an interactive style that enabled them to avoid conflict almost entirely. Third, the instrumental/affective hypothesis about sex differences proposed by Parsons & Bales (1955) was not supported during conflict resolution. Men were not more instrumental than women, nor were women more affective or expressive than men in marital conflict resolution. Sex differences during high conflict situations were found, but in terms of the authors' coding, these were that women were more 'coercive' and 'personally attacking' than men and that men were more 'resolving' and 'reconciling' than women. They wrote that:

Wives appear to behave in ways designed to enforce their own point of view ... Thus, generally husbands behaved in more pacifying ways than wives even in the closeness-distance scenes. Wives showed a fairly consistent tendency toward greater use of emotional pressure. (pp.144-145)

Sequential analysis revealed that following 'reconciling' behaviour by the spouse, wives were more prone to respond with 'coercion' than were husbands. They wrote that: 'Wives tend more than husbands to follow reconciling behavior on the part of their husband with efforts to attain their own aims' (p.142). Following 'rejection' by the spouse, husbands were more likely to respond with 'resolving' and 'reconciling' acts than were wives.

More pronounced sex differences in distressed marriages

In our re-analysis of the data from Komarovsky's (1962) interview study reported earlier, gender differences in self-reported marital behaviour were found to vary as a function of level of marital satisfaction. There is additional evidence that while some gender differences obtain regardless of level of marital satisfaction, most differences between husbands and wives emerge most clearly in the most distressed marriages.

Gottman & Porterfield (1981) asked spouses to deliver pre-written verbal messages with ambiguous content (e.g. 'I'm cold, aren't you?') in a way that conveyed a specific meaning (e.g. 'I would like to snuggle' versus 'Please turn up the heat'). The other spouse had to select the meaning of the message from a list of possibilities. Wives were able to decode the meaning of their husbands' messages accurately regardless of the level of their marital satisfaction. Husbands' decoding abilities were much worse in dissatisfied marriages than in satisfied marriages. Interestingly, this cue-reading deficit among husbands in dissatisfied marriages was specific to messages sent by their wives. When the sender was someone else's wife, these dissatisfied husbands showed no impairment in decoding ability. Identical results have been reported by Noller (1980a) with Australian couples.

Schaap's (1982) study of Dutch couples employed a high conflict task in which couples sequentially tried to resolve as many of their marital problems as they could in 25 minutes. Using the same coding scheme for classifying affect that Gottman (1979) used, Schaap found that among distressed couples, the wife 'compared to her husband delivers the most negative and longest [negative affect] sequences' (p.91). A similar result was reported by Notarius & Johnson (1982).

Raush *et al.* (1974) had reported that husbands used more 'reconciling' and 'resolving' acts than did wives. However, Gottman (1979) found that this gender difference varied both as a function of the level of conflict and the level of marital satisfaction. In the Gottman study, the code of 'editing' was used as a measure of conflict de-escalation ('editing' was defined as a

spouse *not* making an affectively negative response following an affectively negative statement by the other spouse). In satisfied marriages, there was a division of labour as a function of the level of conflict. Husbands played the 'editing' conflict de-escalating role in low conflict discussions (paralleling Raush's findings); wives played the de-escalating role in high conflict discussion. In dissatisfied marriages, neither spouse assumed this role.

Extrapolating from the Gottman (1979) findings and the findings from interview studies reviewed earlier (Komarovskiy, 1962; Locke, 1951; Terman *et al.*, 1938), we propose the following hypothesis:

Hypothesis: Men cannot function as well as women in the context of high negative affect. When conflict levels are low, men will engage in positive, reconciling and resolving behaviours to minimise the likelihood that the conflict will escalate. If conflict levels do reach high levels, men will withdraw from the interaction.

There is some evidence that this difference between men and women in their capacity to function effectively in the face of negative affect may also exist outside of marriage. Ginsberg & Gottman (1986) studied the conversations of male and female roommates. For women there were several affect-behaviour sequences which began with the expression of negative affect, that were positively correlated with greater relationship satisfaction (e.g. negative affect followed by asking a question, negative affect followed by acknowledgement). For men this was not true at all: *all* affect-behaviour sequences that started with the expression of negative affect were correlated with lower relationship satisfaction. Speculating on the meaning of these results, the authors concluded that both men and women tend to avoid negative affect in their interactions with close roommates, but once negative affect is expressed, women can follow it with a number of behaviours that function to preserve relationship satisfaction, whereas men cannot.

A hypothesised physiological basis for gender differences in negative affect

To try to reach a better understanding of the sources of gender differences in self-reported and behavioural responses to conflict and negative affect, we will turn to the physiological domain. We will explore some of the physiological consequences of negative affect, consider their implications for marital interaction, and then review the evidence indicating that men may be more physiologically reactive to negative affect and to other stressors than women.

Physiological consequences of negative affect

There are a number of lines of evidence which indicate that strong negative affect produces widespread physiological activation. Within the autonomic nervous system (ANS), the classic 'flight-fight' sympathetic nervous system activation pattern is well known, consisting of such changes as increases in cardiac rate and cardiac contractility, sweating, deepened breathing, redirection of blood flow toward large skeletal muscles, and release of catecholamines (i.e. epinephrine and norepinephrine) from the adrenal medulla. This pattern of high level sympathetic activation has traditionally been associated with 'fight or flight' behaviours. Although the specific emotions involved have usually been left unspecified, 'flight' and 'fight' imply the emotions of fear and anger. Strong negative emotions are also associated with activation of the pituitary-adrenocortical axis, resulting in the release of adrenocortical hormones such as cortisol (e.g. Mason, 1975).

Recent research suggests that there may be multiple patterns of activation in both the autonomic and endocrine systems. Thus, negative emotions such as fear, anger, sadness and disgust might be associated with somewhat different patterns of ANS activity (e.g. Ekman, Levenson & Friesen, 1983; Schwartz, Weinberger & Singer, 1981). These specific ANS patterns may occur under conditions in which single negative emotions are experienced at moderate to high levels of intensity. The classic pattern of widespread sympathetic nervous system arousal described earlier might be yet another response pattern, which is more likely to occur under highly stressful conditions in which blends of multiple negative emotions are experienced at extremely high intensities.

Some specificity of endocrine response has also been proposed by Henry & Stephens (1979). Their model of endocrine response suggests that anger and hostility may be related to the sympathetic-adrenal medullary axis (release of catecholamines), whereas sadness and depression may be related to the pituitary-adrenal cortical axis (release of cortisol).

Negative affect control

Negative affect could be associated with physiological activation in yet another way. This is when the negative affect is *controlled or inhibited*. We are in the process of studying the phenomenon of 'stonewalling' during marital interaction, which involves controlling and suppressing verbal behaviour, emotional expressive behaviour, and listener backchannel behaviours such as head nods and eye contact. We believe that stonewalling

can produce heightened autonomic arousal if the behaviour is accompanied by cognitions that dwell on the upsetting nature of the interaction (e.g. 'my wife is being unfair').

We do not yet have data from our studies of marriage to support directly the notion that stonewalling is associated with heightened autonomic arousal, but indirect support can be obtained from a number of sources. Facial nonexpressivity under stress has been shown to be related to heightened autonomic arousal in a number of studies (e.g. Notarius & Levenson, 1979) of a phenomenon labelled the 'hydraulic model' (see Buck, 1980). A coping style based on repression and denial has been associated with heightened autonomic responses to stress (Weinberger, Schwartz & Davidson, 1979).

Negative affect and physiological arousal during marital interaction

Marital interaction is a rich source of emotion. As indicated earlier, negative affect and negative affect reciprocity are reliable markers of marital distress. Thus, if the relationship between negative affect and physiological arousal is accepted, there is great potential for the occurrence of physiological arousal during marital interaction, especially during high conflict interactions in distressed marriages where the density of negative emotion should be highest.

In our work on marriage and physiology (Gottman & Levenson, 1985, 1986; Levenson & Gottman, 1983, 1985), we have found a number of strong relationships between marital satisfaction and physiological activation. Marital distress has been associated with a high degree of physiological 'linkage' or interrelatedness between spouses (Levenson & Gottman, 1983). Merely viewing videotapes of conflict interactions has shown the capacity to activate patterns of ANS activity similar to those that occurred when the couple was in the actual interaction (Gottman & Levenson, 1985). In addition, high levels of physiological arousal occurring before and during marital conflict resolution have been shown to be highly predictive of declines in marital satisfaction over a three-year period (Levenson & Gottman, 1985).

Although the precise nature of the mediation of the relationship between these physiological concomitants of marital interaction and marital satisfaction is not yet known, it is likely that the mediation is related to patterns of negative affect expression and reciprocity. A number of our findings involving negative affect parallel those for physiology. In the study that found marital dissatisfaction to be associated with increased physio-

logical linkage between spouses (Levenson & Gottman, 1983), marital dissatisfaction was also found to be related to increased negative affect and increased negative affect reciprocity. In the same study, the relationship between physiological linkage and marital distress was only found during a high conflict interaction (which was characterised by greater negative affect). In the study which reported that high levels of physiological arousal before and during marital interaction were predictive of declines in relationship satisfaction over a three-year period (Levenson & Gottman, 1985), patterns of negative affect reciprocity were also found to predict changes in marital satisfaction.

Physiological arousal may also be associated with subjective and cognitive changes that are detrimental to marital conflict resolution. In distressed marriages negative affect may be elicited repeatedly at high levels of intensity. The associated physiological activation could be quite long-lasting, especially if the arousal level is sufficient to cause the release of stress-related hormones such as norepinephrine, epinephrine, and the corticosteroids. The effects of these hormones may continue long after the initial stimulus has subsided, since the removal of these hormones from the system requires some time. Under these conditions of extended arousal, spouses may experience feelings of prolonged upset, derived in part from the conflict itself and in part from subjective sensations resulting from the physiological arousal (Pennebaker, 1983). In much the same way as high levels of anxiety are associated with decrements in performance, negative affect during marital interaction and the concomitant physiological arousal may interfere with higher order cognitive functions such as problem solving, planning and creative thinking. Such a reduction in the flexibility of cognitive functioning may result in a reliance on automatic and over-learned cognitive routines, and thus a tendency to resort to well-rehearsed, but highly maladaptive behaviours that adversely affect the couple's ability to resolve conflicts.

Sex differences in physiological and emotional reactivity

In this section we will attempt to build a case in support of the notion that men are more reactive physiologically to stressful stimuli than are women. We believe that this heightened physiological reactivity of men and a comparatively lower physiological reactivity of women may provide a biological basis for understanding differences between husbands and wives that have consistently been found in the marital research we have reviewed: (a) wives function more effectively in a climate of negative affect; (b) husbands are more likely to withdraw emotionally in conflictive distressed

marriages; (c) wives are more likely to escalate conflict; and (d) husbands are more likely to attempt to reduce conflict by conciliation.

There are many caveats that need to be offered prior to initiating this analysis. First, there have not been enough studies in which both male and female subjects were exposed to the same stressful stimulus under the same experimental conditions to support great confidence in any conclusions. Second, when sex differences are reported in human studies, it is impossible to separate the relative contribution of nature from that of nurture. Third, sex differences analysed in the context of marital interaction can lead to conclusions that might appear to be casting blame on one spouse or the other. Our sole purpose in undertaking this analysis is to stimulate thinking about the interactions between biology and socialisation in intimate relationships. It is not our intent to blame men or women for the state of dissatisfied marriages, or to produce or provoke incendiary rhetoric.

Autonomic nervous system

From age 15 on, casual systolic blood pressures are higher in men than in women (Eichorn, 1970). In terms of reactivity, Liberson & Liberson (1975) found that men's systolic blood pressure responses to shock were greater than those of women. In a study of the habituation of the electrodermal orienting response, Korn & Meyer (1968) reported that males habituated more slowly than females over the first set of tones. Fisher & Kotses (1974), in a study of subjects' basal skin conductance levels and their responses to bursts of white noise, found significantly higher basal skin conductance levels in males than in females. Eisdorfer, Doerr & Follette (1977) studied males' and females' skin conductance levels during the Valsalva manoeuvre (i.e. exhalation against 40mm Hg for 12 seconds); males had higher skin conductance levels during this manoeuvre than females. Van Doornen (1985) studied the physiological reactions of males and females on a routine day and on the day of an examination. On the examination day males showed a larger adrenalin reaction than females, but the sexes did not differ on serum cholesterol level, systolic blood pressure, and heart rate. Finally, there is evidence that heart rate levels during a waiting period that followed an episode of provocation were less likely to decrease in males than in females (Sapolsky, Stocking & Zillman, 1977).

Endocrine system

A similar pattern of results exists for stress-related hormones released from both the adrenal medulla (norepinephrine, adrenalin) and from the adrenal cortex (corticosteroids). Frankenhaeuser (1975) found a sex

difference among both adults and 12-year-old children in their adrenalin response to challenge. Tasks such as mental tests and examinations led to greater elevation of adrenalin in males than in females. As part of a longitudinal study, Rauste-von Wright, von Wright & Frankenhaeuser (1981) studied the stress and coping patterns of 18-year-old males and females. Obtaining measures of urinary catecholamine secretion under the stress of a six-hour matriculation examination, they found that men excreted more adrenalin than did women. Men and women did not differ in their adrenalin secretion in response to a control condition. These results are consistent with findings reported elsewhere by Frankenhaeuser (1976, 1978, 1982).

Gunnar's (1986) review of developmental psychoneuroendocrinology indicates that more recent studies suggest that sex differences in cognitive and motivational factors may be partially responsible for observed differences in endocrine reactivity between the sexes. Nonetheless, she points out that:

... even when girls and women show an increase in adrenaline secretion, only the boys and men showed a rise in excretion of cortisol (Collins and Frankenhaeuser, 1978; Frankenhaeuser *et al.*, 1978; Lundberg *et al.*, 1981). Second, even when the women clearly had chosen to compete in male-dominated spheres, the rise in their adrenaline excretion was significantly smaller than that observed in males (Collins and Frankenhaeuser, 1978). (p.85)

Most of this research has been done with early adolescents. However, Cederblad & Hook (1980, cited in Lundberg, 1983) found that 3-year-old boys secrete more adrenalin than girls during regular day care activities.

In an investigation of a powerful life stressor, Friedman, Mason & Hamburg (1963) studied corticosteroid excretion rates in parents of children admitted to hospital with diagnosis of malignant disease. Fathers' corticosteroid excretion rates were significantly higher than those of the mothers. Finally, Valtysson, Vinik, Glaser, Zohglin & Floyd (1983) examined the plasma human pancreatic polypeptide (HPP) response to beta-adrenergic stimulation (which mimics sympathetic nervous system activation). The rise in HPP concentration produced in males was six times that produced in females.

Emotion-related behaviour in infrahuman species

In the area of behavioural differences in excitability and emotionality, there is evidence that males across a wide range of infrahuman species tend to be more emotional under stressful conditions than females. Becker (1971)

studied isolation and crowding effects in newborn male and female rats, finding that males were more sensitive than females to the effects of deviations from normal postweaning social stimulation. Masur, Schutz & Boerngen (1980) found similar gender differences in behaviour in the open field situation in young rats. While there were no significant differences at 30 and 45 days of age, by 60 days male rats had higher defecation scores and more ambulation than females.

Sackett (1974) reviewed research on sex differences in the effects of partial and total social isolation in Rhesus monkeys. Males under both of these deprived rearing conditions exhibited more self-aggression (in normal Rhesus monkeys there are no sex differences in aggression; Sackett, 1974:105), reduced activity, less exploration (in normal Rhesus monkeys males explore more than females), and more fear than females. Sackett noted that, in general, socially isolated females were less affected than their male counterparts (p.116), and referred to females as 'the buffered sex'. In particular he proposed the hypothesis:

deprivation-rearing effects are due to a developmental failure of inhibitory response mechanisms ... [and that differences between genders result from] a deficiency in inhibiting those responses that are inappropriate and maladaptive in post-rearing situations ... The isolate cannot or will not inhibit these incompatible, competing behaviors that developed during infancy. (pp.120-121)

He suggested that

females may develop the physiological basis for response inhibition prenatally and therefore are not as adversely affected and persistently affected by abnormal rearing environments as are males. (p.121)

Conclusions regarding hypothesised sex differences in reactivity

Of course, not all of the studies we located found sex differences. For example, van Olst & ten Kortenaar (1978) reported no sex differences in skin conductance and heart rate during information processing of strings of digits. Frodi, Lamb, Leavitt & Donovan (1977) found no differences between fathers' and mothers' skin conductance, systolic blood pressure, and diastolic blood pressure in response to a videotape of an infant's crying or smiling. However, in sum there seems to be enough evidence for us to propose the following hypothesis:

Hypothesis: Under extreme stress males become more physiologically and behaviourally aroused, and are slower to return to prestressor levels than females.

Clearly the definitive work on this hypothesis has yet to be done. Nonetheless, it organises a considerable amount of the literature on sex differences that we have reviewed.

Sex differences in physiological and behavioural reactivity: implications for interactive style and health

Gender differences in reactivity, amplified by gender differences in socialisation, provide some basis for understanding sex differences in marital interactive style and may even shed some light on observed sex differences in health.

Interactive style

To reiterate a portion of our hypothesis, the reconciling and resolving interactive style of husbands in distressed marriages may represent an attempt to manage the level of negative affect in marital interaction and to keep it from escalating. Our hypothesis that men are more physiologically reactive to stress than women provides a theoretical rationale for this effect. If negative affect is more physiologically costly and punishing for males than for females, then men will be more inclined to engage in behaviours designed to minimise negative affect and to keep it from escalating. If this is true, then it can help explain a number of often observed sex differences in interactional style. We will take the characterisation of men as 'rational' and of women as 'emotional' as an example.

There is good evidence for the existence of these rational versus emotional sex differences in the context of close heterosexual relationships. For example, Rubin (1976) wrote about blue collar couples:

Thus, they talk *at* each other, *past* each other, or *through* each other — rarely *with* or *to* each other. He blames her: 'She's too emotional.' She blames him: 'He's always so rational'. (p.116)

Support also comes from a questionnaire study reported by Kelley, Cunningham, Grisham, Lefebvre, Sink & Yablon (1978) in which they conclude:

The female is expected and reported to cry and sulk and to criticize the male for lack of consideration of her feelings and for insensitivity to his effect on her. The male is expected and reported to show anger, to reject the female's tears, to call for a logical and less emotional

approach to the problem, and to give reasons for delaying the discussion ... The results are interpreted in terms of the interaction between a conflict-avoidant person (the male) and his partner (the female), who is frustrated by the avoidance and asks that the problem and the feelings associated with it be confronted. (p.473)

Males may use whatever means possible (which are usually withdrawal, avoidance and rationality) to manage the level of negative affect so it does not escalate. In dissatisfied marriages, this rational, avoiding style of males, combined with the emotional, engaging style of females leads to the escalation of the intensity of negative affect by females and to withdrawal by males. One alternative is for couples to handle the discussion of disagreements in a context of low conflict, preferably one of affection and gentleness (see Raush *et al.*, 1974:83 on affection and the conflict-avoiding style).

Health

There are clear health implications of these hypothesised sex differences in physiological reactivity since they cut across the major ANS and endocrine systems that have been implicated in the functioning of the body's immune system (Jemmott & Locke, 1984; Korneva, Klimenko & Shkhinek, 1985). A greater physiological 'imperturbability' of women has clear implications for understanding the consistent finding that premenopausal women are superior to men in their resistance to most infectious diseases and environmental stresses (e.g. Hoyenga & Hoyenga, 1979). These differences are worldwide, hold across age, and appear generalisable to psychological stressors such as the effects of divorce on young children (Hetherington, Cox & Cox, 1981). Females appear to be put together better psychobiologically to deal with life's more chronic stresses than men. Women appear to be tougher, more resilient, and able to recover more rapidly from upset than males.

Of course, this is not to say that women are invulnerable to stress, but only that they are somewhat less vulnerable than men. Clearly, stress can have a deleterious effect on women as well as men. Kiecolt-Glaser *et al.* (in press) employed direct *in vitro* assessments of immune system functioning in a sample of 38 married women and 38 separated/divorced women. They found that immune system functioning was suppressed: (a) in recently divorced or separated women compared with married women; (b) in dissatisfied married women compared with satisfied married women; and (c) in recently divorced or separated women who maintained a strong attach-

ment to the ex-partner compared with those who did not. Unfortunately, the equivalent work has yet to be done with men, among whom we would predict that these deleterious effects of marital distress and separation on immune system response would be even more pronounced.

It is well known that social relationships are crucial factors in predicting health and illness (for a review see House, 1981). Berkman & Syme (1979), in a nine-year longitudinal study of 2,229 men and 2,496 women, reported that the likelihood of a person dying could be predicted by the presence or absence of four kinds of social ties: (a) marriage; (b) contact with friends; (c) church membership; and (d) formal or informal group associations. Parenthetically, although the findings held across sex and age, being married had the strongest relationship with longevity for men, while having contacts with friends had the strongest relationship with longevity for women.

There are a number of lines of evidence linking negative affect to health. Bereavement following loss of a loved one has been associated with diminished immune system response, increased somatic illness, and increased risk for mortality (see Van Dyke & Kaufman, 1983, for a review). Anger, hostility, and suppressed rage have been shown to be related to hypertension and coronary heart disease (see Appel, Holroyd & Gorlin, 1983, for a review). The Type A coronary prone personality profile, which is thought to be related to heightened risk for coronary heart disease, is associated with a life style characterised by negative affects such as hostility, contempt and anger (Dembroski, MacDougall, Eliot & Buell, 1983).

Despite the fact that these relationships between health, negative affect and social relationships are well recognised, neither the social processes nor the biological mechanisms involved have been precisely specified. A great deal of work is currently under way that attempts to discover the mechanisms that mediate between stress and the onset of disease. This search for mechanisms is greatly complicated by the long gestation periods for many chronic diseases. Nonetheless, it is important to note that among the list of potential players often touted for the role of mediator between life stress and chronic diseases are many of the ANS, endocrine and behavioural variables for which we have presented evidence that men are more reactive than women.

An example can be drawn from the evidence we have reviewed that men are more reactive than women in ANS cardiovascular and adrenal medullary endocrine responses to stress. Current models for the development of atherosclerosis posit that heightened ANS cardiovascular reactivity can act to damage the endothelial lining of the blood vessels (e.g. Obrist,

1981). Chronically elevated levels of circulating catecholamines could have a similar effect. With repeated injury to vessel linings, low-density lipoproteins and other materials become incorporated into the healing process leading to the production of fibrous arterial plaques. It is worth noting that, among middle-aged Caucasians, estimates of death rates from coronary heart disease are six times higher in men than in women.

Summary and conclusions

We have attempted to cover a great deal of ground in this chapter and our argument has taken a number of turns. There is much that has been speculative and we can only wish that more data were available for testing the hypotheses than have been proposed. At this juncture, a summary and some final conclusions seem in order.

We have noted that sex differences in marital grievances have been reported starting with the earliest studies of marriage, which suggest that in unhappy marriages husbands' grievances centre on their wives' complaining and being conflict engaging, whereas wives' grievances involve their husbands' being withdrawn and withholding affection. Upon closer examination it appears that husbands and wives in satisfied marriages do not differ in the *amount* of their self-disclosure, but do differ in the topics about which they disclose and size of their social networks. It is in dissatisfied marriages that the most pronounced differences emerge; in these marriages husbands withdraw much more than do their wives and may not self-disclose at all.

We proposed that in the context of strong negative affect and conflict, women function more competently than men. In this context, men are much more likely to withdraw from active participation in the emotional life of the relationship. These conclusions are supported by interview, questionnaire and observational studies. The observational studies indicate that wives are more negative, more conflict engaging, more coercive, and use more emotional pressure than their husbands; husbands are more positive, reconciling and pacifying than their wives. The characterisation of men as being more 'rational' than women may well reflect the attempt by men to use pacification and reconciliation to avoid escalating negative affect. Describing men as 'rational' may be a way of placing their inability to handle negative affect in the best possible light. Dubbing women as 'emotional', which historically has carried a negative value, may be a way

of minimising the value of their greater ability to function in a climate of negative affect.

We argued that the effects of strong negative affect can be particularly pronounced for the arousal of the autonomic nervous system. These effects are long lasting, are related to subjective feelings of upset, and are likely to bode ill for the social processes necessary to resolve differences of opinion in a marriage. High levels of physiological arousal can lead to the employment of over-learned and more automatic behaviour routines and cognitions that function to minimise the probability of creative problem solving, focused attention, and higher order planning. These effects may mediate our findings that certain kinds of physiological arousal are markers both of current marital distress and of future decline in marital satisfaction.

We hypothesised that sex differences in biological functioning underlie many of the differences between the interactive style of husbands and wives, especially as pertains to the handling of intense negative affect. Men's autonomic and endocrine responses in response to a given level of stress (including negative affect) may be greater, and may take longer to return to baseline levels than women. Many of the gender differences in marital style that have been reported in the literature could reflect husbands' attempts to avoid interactions that would produce uncomfortable levels of physiological arousal. Husbands' coping strategies such as conciliation, withdrawal and stonewalling may be effective in happy marriages, where conflicts are infrequent, less intense, and less long-lasting. In contrast, these strategies may be largely ineffective in the pervasive climate of negative affect that exists in distressed marriages. In fact, husbands may actually *increase* the level and chronicity of their physiological arousal by their attempts to control the stressfulness of the interactions. As the relationship deteriorates, and as conflicts become more frequent and more intense, the institution of marriage ceases to provide any safe harbour to retreat from the stresses of the external world.

Finally, we have offered some speculation as to the relations among gender differences in interactive style, physiological reactivity, and health. As Selye (1966) pointed out many years ago, biological systems that have evolved to protect us against noxious external agents can, when chronically activated, become much more toxic than their activating stimulus. An unhappy marriage may seem at first glance to be fairly benign. We believe, however, that over time marital distress can have profound physiological and health consequences for both spouses, and that these consequences may be especially profound for husbands, who may not be as well equipped by nature or by nurture to adapt to life's more chronic stresses.

Notes to Chapter 8

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PART III: Problem solving

The two chapters in this section posit that conflict is inevitable in close relationships such as marriage. Scanzoni & Fox (1980) suggest that modern marriages are exceptionally prone to conflict because there is more explicit discussion and negotiation about role arrangements. In the modern family, it is not always clear who is supposed to do what and the possible flexibility of roles for husbands and wives creates a greater potential for conflict. Furthermore, newer value orientations toward family life have questioned some older assumptions about how decisions should be made and who should make them. The ability of husbands and wives to solve the problems that inevitably arise between them is a major factor in marital success.

In their chapter, Schaap and his associates carefully review the previous research and theory on conflict in marriage, develop and validate a new scale for measuring marital communication and marital satisfaction, and report on a number of studies from their laboratory using a variety of different methodological techniques and approaches. One of the conceptual foci of this research is the discussion of husband and wife differences in preferred conflict resolution styles. Conflict resolution in marriage is examined by a triangulation of methods. These authors code the verbal and nonverbal behaviours of couples during conflict and use both information statistics and lag sequential analysis techniques to examine pattern and structure in the interaction. This research group intensively analyses the dialogues of selected samples of their couples using a variety of discourse analytic techniques in order to add more specific information to the codes generated using the Couples' Interaction Scoring System. Finally, these authors consider the perspectives of the participants not only by constructing questionnaires but also by using interpersonal process recall where participants discussed their interactions.

In the next chapter, Fitzpatrick employs her marital typology to report on a number of studies examining conflict resolution strategies used by