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### **13. Crying and health**

#### **Ad J.J.M. Vingerhoets & Jan Scheirs**

In the popular press there is little doubt that crying is healthy. Cornelius (1986) systematically examined the content of popular articles on weeping published mainly in the United States from the Mid-1800's to 1985. This yielded a total of 70 articles. As one of the major themes, the author identified the conviction that failure to cry results in negative (health) consequences. In no less than 94 percent of the articles the advice to the readers was to let their tears flow. In particular, in the articles published after 1950, Cornelius showed, the classic psychosomatic point of view (cf. Groen, 1957) was popularized. Crying was considered to be an important means for releasing physiological tension. If tension was not released by crying, it might find an outlet elsewhere, for instance, by affecting the body and resulting in disease.

Withholding tears has been described as being potentially emotionally or even physically damaging. Headaches, ulcers, hypertension, and insomnia are examples of disorders that were considered to result from the failure to cry. However, one should be aware that these beliefs prevail in our western culture, which does not necessarily mean that other cultures have the same opinions. Wellenkamp (1988), for example, describes the beliefs of the Toraja, living in Indonesia, with respect to crying and catharsis. For the members of this tribe, it is the expression of negative emotions that should be avoided, because it may lead to serious illness, insanity, and even premature death. Crying is only expected and regarded as positive, even preventing illness, following a death and during a funeral. In addition, it is a traditional remedy for an infertile woman to call for the women to cry with her at a rock said to be inhabited by a spirit (Wellenkamp, 1992).

There is an even longer history of the presumed association between crying and health in writings on medicine and in the arts. Cornelius (1997) cites the Dutch physician and philosopher Franciscus Mercurius Van Helmont, who as early as 1694 wrote about the necessity of crying after bereavement in order to prevent the development of distemper or sickness. A further well-known quotation is from the poem "The Princess", written in 1847 by Alfred Lord Tennyson:

Home they brought the warrior dead;

She nor swooned nor uttered cry.  
All her maids, watching said,  
“She must weep or she will die”.

More recently, Frits Zorn, the pseudonym for a Swiss cancer patient, wrote in his 1988 autobiography that all the tears that he had never wept nor had wished to weep during his life had massed in his neck and had created his tumor, because - as he formulated- their true function, i.e. being shed, had not been attained.

Darwin (1872/1965) points out that “children, when wanting food or suffering in any way, cry out loudly (...) partly as a call for their parents for aid, and partly from any great exertion serving as a relief” (p. 174). He even suggest a dose-response relationship, as evidenced by the following comment: “And by as much as the weeping is more violent and hysterical, by so much will the relief be greater, - on the same principle that the writhing of the whole body, the grinding of the teeth, and the uttering of the piercing shrieks, all give relief under an agony of pain” (p. 175). Menninger et al. (1964) noted that crying may be considered as perhaps the most human and most universal of all relief measures.

Frey (1985) further quotes the famous British physician Sir Henry Maudsley, stating that “Sorrows which find no vent in tears may soon make other organs weep.” Other examples of the conviction that crying is healthy and beneficial can be found in Solter (1995), who considers crying “an inborn healing mechanism”(p. 28) and in Mills and Wooster (1987), who describe crying as a “vital part of a healing or growing process that should not be hindered” (p. 125). Nearly thirty years ago, Rees (1972) speculated that the increased mortality observed after bereavement in men may be due to repression of the expression of sadness, including crying. To put it briefly: Cry or die!

The idea that unexpressed emotions, including the inhibition of crying, may result in physical disease has been conceptualized by different models, including what may be referred to as repression theory, first described by Freud (1915/1957) and further elaborated by Pennebaker (e.g. Berry & Pennebaker, 1993; Pennebaker & Susman, 1988). The basic assumption of this theory is that the active inhibition of emotions and behavior requires physiological effort, thus resulting in a more or less chronic strain to the biological system. Early case descriptions by psychosomatically oriented clinicians also provided support for the idea that the chronic inhibition of sadness and crying was specifically related to the

development of respiratory disorders such as asthma, as had been hypothesized by psychoanalysts like French and Halliday (see Alexander, 1950, p. 139). In more recent times, the rationale behind the encouragement to cry has been mainly based on Frey's (1985) ideas that crying is important for the excretion of toxic substances released during distress.

There is thus little doubt in the popular media and in the scientific literature that crying is important for one's health. An early example of the scientific approach is the study by Borgquist (1906). This author sent out a questionnaire with open-ended questions and found that people rarely indicate that crying is not beneficial. Interestingly, he made a distinction between the immediate physical effects and the delayed effects of crying on well-being and mood. Many respondents in his sample reported being exhausted, sick, or physically tired from crying, but also mentally relieved. Borgquist also paid attention to the frequently reported termination of crying episodes by sleep, which according to the author may be expected after a crying spell characterized by both physical exhaustion and mental relief. On the other hand, he also referred to the ill effects of (prolonged) crying, as evidenced by sickness, loss of appetite, physical weakness, and "unusual activity of the heart" after a crying spell. As more permanent or long-term effects of crying, Borgquist identified symptoms like headache, stupor, sickness, exhaustion, nausea, and sore eyes. He further made mention of theories trying to explain crying and its effects on somatic processes. With regard to the beneficial effects of crying, these theories emphasize the stimulation of circulatory mechanisms, the revival of metabolic processes, and the relief of the overcharged nervous system.

Borgquist (1906), however, did not attempt to measure the effects of crying directly and systematically. Also, some relevant additional studies have appeared since then, which we will summarize below. These will make clear that it is not established whether crying promotes health, nor what the mechanisms are by which the effects, if any, might come about. In this contribution, we want to deal in more detail with these intriguing questions, summarizing the relevant scientific literature, and concluding with some suggestions for future research.

### **An overview of research findings**

Theoretically, the hypothesis that crying has a positive effect on health might be examined from two different viewpoints: (i) What is known about the short-term effects of crying? Does a crying spell positively influence mood and/or psychobiological processes, including autonomic nervous system activity, endocrine activity, and/or immune functions? and (ii) What is known about the relationship between crying frequency as a more or less stable person feature and health status? The last broad question addresses the long term effects of crying.

We will now discuss the available evidence for each of these questions in more detail.

### *The immediate effects of crying*

With respect to the proposition that crying brings relief and improves mood, the scientific evidence is limited and inconsistent, as made clear by Cornelius (1997, Chapter 11, this volume). In order to avoid unnecessary overlap between chapters, we here refer to Chapter 11 and limit ourselves to his conclusion that there was a remarkable difference in the results of laboratory and retrospective real-life studies. Cornelius suggests that one variable in particular plays an important role in determining the immediate effects of crying, namely whether or not the negative events that led the individual to cry have been resolved. If the crying person understands that nothing has changed, (s)he will be less likely to report mood improvement.

From the beginning of this century until now, however, an issue that has been fairly neglected in the literature is the physiological mechanisms by which the shedding of tears may bring relief and mood improvement. Gross et al. (1994) give an overview of several mechanisms that have been held responsible for the assumed relief. They distinguish between theories fitting in a “recovery view”, versus those fitting in an “arousal view”. According to the recovery view, the function of crying is to restore homeostasis in one way or another, for instance, by the release of stress-related toxins, or by an increase in parasympathetic activation (as reflected in tears) that follows high levels of sympathetic activation caused by emotions. As an alternative speculation fitting in the recovery view but left unnoticed by Gross et al. (1994), we would like to add the hypothesis that crying induces the release of endorphins which may facilitate restorative processes after having

been in distress (e.g. Panksepp, 1986). Crying is here thus seen as part of an arousal reduction response. In contrast, according to the arousal view, crying leads to a state of increased physiological activation that is stressful and aversive to both the crier and the bystander. This state would bring about attempts to lessen the tears and change the situation as well as stimulate emotional support, comforting behavior, and, possibly, inhibition of aggression, resulting in mood improvement. For a more detailed discussion of the effects of crying on others, we would like to refer to chapter 9.

In the following, we address studies aimed at investigating the relationship between crying and psychobiological processes specifically. A number of laboratory studies, aptly reviewed by Cornelius (1997), focused on the effects of crying on mood as well as psychophysiological functioning (Cornelius et al. (cited in Cornelius, 1997); Gross et al., 1994; Kraemer & Hastrup, 1988; Marston et al., 1984). The results are rather clear and consistent. The data generally fail to support the hypothesis that crying facilitates recovery. Kraemer and Hastrup did not find differences in heart rate of criers and non-criers exposed to a sad film. In contrast, Marston et al. and Gross et al. reported significant increases in heart rate and - in the case of Gross et al.- also in other indicators of autonomic nervous system activity like finger temperature, galvanic skin response, and respiration. Gross et al. explicitly addressed the issue of physiological recovery after crying. Contrary to expectations, it took longer for crying than for non-crying participants to reach baseline levels of arousal after having been exposed to a sad film. These results thus fail to support the physiological recovery hypothesis formulated above.

As far as is known, only one study focused on the effects of crying on levels of stress hormones. Vingerhoets and Kirschbaum (1997) exposed female subjects to emotional movies and measured mood and saliva cortisol. Although moderate but significant correlations between self-reported intensity of crying and reduction in cortisol could be demonstrated, no differences in the hormonal levels of criers and non-criers were found after the film. In this respect, some animal work may also be interesting. Bayart et al. (1990) explored the reactions of monkeys to separation from their mothers. A remarkable finding was that in these monkeys there was a negative correlation between plasma cortisol levels and vocalizations expressing distress. Thus, screaming was associated with reduced cortisol secretion. Assuming that human crying is equivalent to these distress reactions, it may be hypothesized that crying also reduces the cortisol output of the adrenals. These

preliminary findings suggest that crying may promote the recovery of the homeostatic balance within the body, a conclusion seemingly in contrast to the findings by Gross et al. (1994) concerning the level of autonomic nervous system activation.

In addition, there are two studies (Labott et al, 1990; Martin et al., 1993) investigating the effects of crying on an immunologic variable that is characterized as a first-line defense against invasion by potential pathogens, namely secretory immunoglobulin A (S-IgA). The results of both studies yielded evidence of a negative effect of crying on this immunologic parameter and thus of a negative effect of crying on health. When people cried, there were significant decreases of S-IgA levels, representing decreased protection against pathogens. Such decrements in S-IgA were not found when subjects only felt sad. In other words, not the mere feeling of sadness, but the specific act of crying appeared to have a negative influence on the body's defense mechanisms.

A topic that we do not want to leave undiscussed here is the work of Panksepp and coworkers on distress vocalizations in animals (see Panksepp. 1998 for an overview). Based on their work, we hypothesize that crying may trigger the release of certain endogenous opioids, which may have a sedative and pain reducing effect. As mentioned above, Panksepp also suggests as a main function of these substances the facilitation of recovery after having been in distress. These hypothesized effects thus match nicely the supposed functional effects of crying (sedation, pain reduction, restoring the homeostatic balance). Further research is needed to test this intriguing hypothesis in humans.

Finally, there is the already mentioned anecdotal evidence put forth by Borgquist (1906), suggesting that crying results in symptoms like headache, nausea, etc. Moreover, Saul and Bernstein (1941) describe the interesting case of a patient suffering from urticaria. It appeared that crying had a special reciprocal relationship to her symptoms. When she cried, she did not have urticaria and the attacks usually terminated with crying. On the other hand, the suppression of crying implied the onset of the symptoms. These authors comment that they had seen more cases with similar experiences.

The evidence taken together reveals only weak support for the notion that there are positive short-term effects of crying on bodily functions. Rather, studies that were done in more controlled conditions suggest that crying might have immediate effects opposite to what has generally been believed: it depresses mood, leads to increased autonomic nervous system activation, and negatively affects immunity.

### *Crying frequency and health status*

Support for the possible positive long term effects of crying on health might be provided by empirical data obtained in studies addressing one of the following four types of research questions:

(a) Do patients, in particular, those with psychosomatic disturbances, cry less frequently than healthy controls? (b) Do people who cry relatively often, feel better or are in a better health than those who cry less? (c) Is it true that people who do not express their emotions and those who inhibit crying in particular, are more liable to somatic disease? (d) Is it possible that crying acts as a moderating variable in a stress - health relationship, i.e., is crying only relevant with respect to well being if one has been exposed to life stressors?

#### Crying in (psycho)somatic patients

With regard to crying in somatic patients, the number of relevant studies is limited. The best known study probably is the thesis by Crepeau (1981), who investigated crying behavior in ulcer patients, colitis patients, and healthy controls. The results corroborated some psychosomatically oriented hypotheses. Her patients reportedly cried less frequently and evaluated crying more negatively than did healthy controls. However, her patient groups were not clearly defined and there were other methodological problems with this study. More recently, Schlosser (1986) failed to find an association between crying frequency and physical disorder. Labott and Martin (1990) also examined the relation between emotional coping (both humor-coping and cry-coping) and physical health. In contrast to Crepeau (1981), they found that both in women and in low-income respondents, there was a positive relation between severity of physical disorder and crying. Vingerhoets et al. (1992) failed to establish any differences in crying frequency between hyperprolactineamic patients and healthy controls. Zeifman (personal communication, March 1999) found that infants and newborns who rarely cry do not appear to suffer from more health problems or psychological deficits than “normal” criers.

To summarize, the few studies addressing this issue until now have yielded mixed findings. One should further realize that from the kind of correlational research as reported above, it is impossible to infer the direction of causal relationships between variables



without ambiguity. As an illustration, we refer to asthma patients who may learn to refrain from crying because this behavior can trigger or exacerbate an asthma attack (Miller, 1987; Miller & Wood, 1997). In conclusion, there is no evidence - mainly due to a lack of adequate studies - of a relationship between crying frequency and somatic health.

### Crying in psychiatric patients

A different picture emerges in the case of psychiatric disturbances (see also Chapter 14, this volume). A serious problem here is that it is often not clear whether or not crying should be considered a symptom of a specific disorder, like depression. In the three most recent versions of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1980; 1987; 1994) the relevance of crying for diagnosing mood disorders underwent some remarkable modifications. Whereas In DSM-III (1980) crying was included as an important characteristic of dysthymic disorders, DSM-III-R (1987) and DSM-IV (1994) no longer included this item under this heading. Hastrup et al. (1986) reported a weak positive association between depression and crying, whereas, at the same time, a substantial link was found between depression and withholding tears. Frey et al. (1983) found higher self-reported crying frequencies among women with clinical depression ( $8.0 \pm 1.5$  times per month) than among healthy controls ( $5.3 \pm 0.3$  per month). The range of the distributions of the two samples, however, overlapped to a large extent (0 to 31 times per month for the depressives and 0 to 19 times for the controls). These observations challenge the use of crying as a specific symptom of depression (however, see Okada, 1991). The precise relationship between crying and affective disorders is thus not clear.

Hamilton (1982) regards continuing spells of crying as becoming less effective for bringing relief. This author describes crying as a feature of milder forms of depression, whereas in severe depressions, patients may be even incapable of crying. Other authors also noticed that the more severely depressed patients seldom cry (Kottler, 1996; Patel, 1993). To complicate things even further, Davis et al. (1969) reported impressive differences in crying frequency in neurotically depressed patients (81.8%) versus psychotically depressed patients (23.8%). These findings once more suggest that the association between crying and depression is weak at best. Additionally, De Jong and Roy (1990) found a strong negative association between levels of corticotropin-releasing hormone in cerebrospinal fluid and

crying (as measured by the crying item of the Beck Depression Inventory) in a sample of 17 depressed patients. However, the authors did not provide any hypothesis concerning the possible nature of this relationship.

Mangweth et al. (1999) compared crying behavior of eating disordered females and healthy controls. The patient group did not differ from the controls in general crying proneness and the effects of crying on mood. In contrast, the patients' estimates of crying frequency were significantly higher. Moreover, on some specific crying proneness items, in particular those addressing features of their psychiatric diagnosis such as feeling humiliated, feeling insulted, having low self-esteem, and traumatic memories, they also obtained higher scores reflecting a greater proneness to cry.

It further has been reported that people with posttraumatic stress disorder show an "emotional numbness," inhibiting the display of any emotional reactions (e.g. Litz et al., 1997). This too is an illustration of the fact that (not) crying should sometimes be considered as a consequence rather than as a determinant of health status.

In addition, one should be aware of the possibility that medication interferes with crying, as has been shown by Oleshansky and Labbate (1996), who report on the inability to cry in patients treated with serotonin reuptake inhibitors.

Finally, there might be a relationship between certain types of psychopathology and/or personality features that may explain remarkable differences in crying behavior. For example, it might be hypothesized that people like psychopaths, who lack any empathic abilities, cry less often than normals (see also Chapter 7, this volume).

In conclusion, there is little reason to assume that crying and mental health are related in some simple way.

#### Health status of criers and non-criers

As indicated before, another approach is to focus on crying behavior as the independent, rather than the dependent variable. Do those who cry relatively often feel better than those who do not? The results of a study by Vingerhoets et al. (1993) of a group of 131 women yielded a correlation between self-reported health and crying frequency of exactly .00. There was thus no association between amount of crying and subjective health. However, a limitation of this study might have been that the obtained range of the health ratings was too narrow. One may also challenge the simplicity of the hypothesis tested. Given the

findings of the previous section, i.e. that among depressive patients there might be distinct subgroups, each associated with its own degree of crying, one might speculate that it makes more sense to expect a curvilinear relationship between crying frequency and health status than a linear one. Similar comments have been made by Bronstein et al. (1996), who found a positive association between crying proneness and adjustment in male adolescents and a negative association in female youngsters.

Of further interest is a case-study by Linton (1985), who reports on the treatment of a 26-year old woman seeking help because of her inability to express emotions, in particular sadness and crying. Ever since she was a child, she had refrained from crying. Applying a comprehensive behavioral treatment including assertiveness training oriented towards emotional expression plus modeling and systematic shaping of crying behavior, this patient learned to express her feelings and to cry. This treatment also had a positive effect on her sleep problems and anxiety, resulting in a significant increase in well-being. Of course, the value of such case studies is limited because not only the crying behavior changed significantly, but probably also her assertiveness and other variables, preventing the possibility of drawing any clear conclusion. Nevertheless, it is tempting to speculate about a causal relationship between the increase in crying behavior and the increased well-being. However, future studies should address this issue in a sound methodological way.

#### Health and the inhibition of tears

There is suggestive evidence in the literature that the nonexpression of emotions is associated with the development or poor prognosis of somatic disease. Well-known examples are cancer (e.g. Gross, 1989; however, see also Bleiker & Van der Ploeg, 1997), hypertension (see Nyklicek et al., 1998), and myocardial infarction (e.g. DeNollet, 1997). It is remarkable that, in the determination of the level of nonexpression, measures of crying until now have seldom or never been used. Temoshok and Dreher (1993), discussing the Type C behavior pattern, devote some attention to crying. Type C individuals are described as people working hard to keep on a happy face to the world. They are afraid that grief will overtake them and by consequence do not allow themselves to indulge in tears. According to these authors, many of these Type C persons may have lost their capacity for crying in childhood because their parents prohibited, ignored, punished or disapproved of shedding tears.

Accepting the evidence that nonexpression of emotions is associated with ill-health, a crucial question is whether crying occupies a special position. In other words, is not crying in a certain context more negative for your health than not laughing in another context, or not expressing pride or jealousy, etc? Gross and Levenson (1993) examined the effects of suppressing sadness and amusement while watching films on physiological functioning. Their results indicate that in both conditions there was evidence of increased sympathetic activation of the cardiovascular system. In a later study, similar findings were found for disgust (Gross, 1998). To summarize, apparently, inhibition of all emotional response tendencies seem to lead to acute increases in physiological activity that in the long term may result in health damage. Since in normal circumstances people will seldom have the urge to cry, it seems very unlikely that inhibition of it may have any significant effect on health status. Only when the inhibition is generalized to all kinds of (negative) emotions and has turned into a more stable personality trait, the chronicity may have serious consequences for bodily processes and health.

In addition to this form of emotion regulation (“response-focused emotion regulation”), Gross and Muñoz (1995) emphasize the existence of a second kind, referred to as “antecedent-focused emotion regulation.” This form of emotion regulation concerns behaviors and cognitions that are made active in order to prevent the occurrence of an emotional response. To mention some examples, we may seek or avoid particular emotional events or situations, pay selective attention to aspects of an environment, or appraise the stimulus in ways that will change the emotional significance. In contrast to the response focused emotion regulation which seems to require physiological effort, it is not likely that antecedent-focused emotion regulation is generally accompanied by increased arousal.

The ambiguity of the concept of emotion regulation is that it can be considered both as a means to maintain health and at the same time as an indicator of (mental) health. Poor emotion regulation implies that we fail to regulate which emotions we feel or express, be it in the work setting, the social domain, or in inner life, as is made clear by Gross and Muñoz (1995).

#### Crying as a moderator variable

In modern stress theory, coping behaviors refer to (behavioral and cognitive) efforts to eliminate stressors or to dampen the emotional distress caused by them. A global distinction can be made between problem-focused coping and emotion-focused coping (Lazarus & Folkman, 1984; Steptoe, 1991). Problem-focused coping refers to efforts to remove the stressors or to reduce their intensity. Emotion-focused coping, in contrast, implies the efforts to diminish the intensity of the emotions and to regulate one's emotions adequately. There is thus a strong parallel with the just mentioned emotion regulation strategies.

Vingerhoets et al. (submitted) have put forth the hypothesis that crying may be considered a special kind of coping strategy, serving both of the above mentioned coping functions. On the one hand, they make a comparison with displacement behaviors seen in non-human animals. Ethologists have suggested that organisms in a situation of conflict, being unable to perform the actions for which they are motivated, must find a palliative in order to release the pent-up energy. Dantzer (1991) emphasizes the stereotypic rhythmic movements (including leg swinging and sucking a pacifier) as potentially being important in this respect. Note also the everyday observation that crying can be pacifying in young children and the proverbial statement that one can "sob oneself to sleep." One may wonder whether the rhythmic sobbing as can be seen at funerals in non-Western cultures has a similar function. Further note the rhythmic movements often made when praying or exercising religious activities. These speculations also fit nicely with the previously formulated hypothesis, based on Panksepp's (see Panksepp, 1998) work, emphasizing the importance of the release of endogenous opioids. On the other hand, they emphasize the powerful effects of crying on others, making it a means to manipulate the situation. Lipe (1980) further suggests that crying may alter the physiologic state so as to facilitate problem-solving behaviors. Crying may thus have the potential to serve both functions and may be helpful in turning uncontrollable situations in somewhat more controllable ones, in that way significantly reducing the stressfulness of it.

However, only one study known to us (Labott & Martin, 1987) specifically focused on the hypothesis that crying may act as a moderator variable, revealing its positive effects in adverse and stressful situations. The results of this study did not lend support to the hypothesis that crying facilitates the coping process resulting in a better mood after stressor exposure. In addition, there are two studies focusing explicitly on the effects of expressing

emotions in a bereavement situation. Znoj (1997) investigated the well-being of women who had lost their spouses. Crying during imaginary talking with their deceased partners proved to be unrelated to subsequent well-being.

### *Indirect effects of crying*

As mentioned above, it should not be overlooked that crying may also have strong effects on the social environment. If it is true that crying has a strong potential to elicit social support and to promote attachment, then it may be expected that also via this route crying promotes health. There is ample evidence that social support may influence psychobiological processes and act as a buffer against the negative health effects of stressful conditions (e.g. Cobb, 1976; Uchino et al., 1996). A distinction is often made between emotional support (offering the shoulder and the arm around you, comforting words), informational support (advice and useful suggestions how to deal with problems) and instrumental support (offering help, lending money or tools).

Cobb (1976), in his classic review, emphasizes the informational and emotional value of social support processes (e.g., that one is cared for and loved) in fostering coping and adaptation. In a recent review of the literature on social support and physiological processes, Uchino et al., (1996) come to conclude that social support is associated with proper functioning of the cardiovascular, endocrine, and immune systems. There is evidence showing that social support lowers cardiovascular reactivity to psychosocial stressors, which is thought to reflect, in part, sympathetic-adrenergic activation. Such observations have led to the formulation of the hypothesis that this may be a mechanism through which social support may be related to positive long-term effects on health. The observations by Seeman et al. (1994) strongly suggest that it is in particular emotional support that has reliable effects on physiological functioning.

Bowlby (1972) strongly advocates the thesis that crying is most important in facilitating attachment to youngsters, together with other behaviors like smiling, suckling, and following. Assuming that this specific function of crying has not been totally lost in adulthood, it is interesting to consider the results of a recent study by Zachariah (1996) among 118 primiparous pregnant women. This author examined predictors of psychological well-being in this special group and found that most important were

husband-wife attachment, life stress, and social support. It is tempting to speculate that also in this group crying facilitates attachment, which makes it more functional that at least a minority of pregnant women have a rather low threshold to shed tears, particularly in the first phase of pregnancy (Lutjens, 1998).

### **Five causal models that may explain the relationship between crying and health**

To summarize the above evidence and to provide an interpretative framework, we would like to propose five different models about how crying and health might be related and which may be helpful to design future studies addressing this issue. The models are presented in Figure 1.

In the first model (a), there exists a direct, possibly biological, influence of crying on health. The data presented in the beginning of this article under the heading “the immediate effects of crying,” showed that the evidence for such a relationship is ambiguous and not very compelling.

The second model (b) shows an indirect relationship, brought about by intervening variables which are largely of a social psychological nature. The largely circumstantial evidence presented in the section “indirect effects of crying” showed that such a mechanism cannot be ruled out. It might be interesting to investigate the role of social support in moderating the effects of crying directly. This can be done by designing an experiment in which people are induced to cry and are assigned to one of several groups, with either bystanders absent or present and in an active versus passive role with regard to comforting behavior.

Model (c) depicts a spurious relationship in which personality factors or coping styles are associated with both crying and health. There is indeed some evidence for a positive relationship between neuroticism, depression, empathy, and repression, on the one hand, and propensity to cry on the other (De Fruyt, 1997; Peter et al., submitted; Vingerhoets et al., 1993; Vingerhoets et al., 1998; Williams, 1982). Neuroticism or “negative affect” is known to correlate negatively with subjective health, but generally not with more objective health indicators (Watson & Pennebaker, 1987). Moreover, women who attain high scores on hardiness (which is related to being resistant to stress) seem to cry less and feel worse after a crying spell than do women who are low on this variable

(Schlosser, cited in Goldberg (1987)). Repression in particular is known for its negative association with (at least somatic) health status (e.g., Schwartz, 1990; Schwartz & Kline, 1995).

The fourth model (d) emphasizes the possible buffer functioning of crying. This means that crying only has effects on (somatic and/or mental) well-being when being exposed to stressful conditions and experiencing distress. In normal situations, crying may not have any great effects on the individual.

Finally, model (e) refers to the situation in which crying can be considered a symptom or a consequence of disease, a mood state indirectly induced by the disease or the diagnosis, or a treatment related effect. Examples are the so-called post-partum blues (Beck, 1991), as well as neurological conditions as CVA's, Parkinson's disease, and multiple sclerosis. Here, sufferers tend to cry more easily than normals and as far as the neurological patients are concerned, they often do this without a discernable cause (Shaibani et al., 1994; see also Chapter 15, this volume). The inhibition or blocking of crying can also be a consequence of disease, as in the example of the asthma patients given earlier, or a side effect of medication. Finally, crying can be a reaction to the diagnosis that the patient is suffering from a serious and/or life threatening disease (Wagner et al., 1997). It is clear that in all these situations the association between crying and (ill) health points to a reversal of cause and effect, where the illness or suffering probably comes first and the increased or decreased crying follows. The plausibility of such a relationship was further supported by the data of a pilot study by Laan (2000, personal communication), which revealed that 16% of the persons who affirmed the question whether their crying proneness had more or less permanently changed after a significant life event, mentioned an injury or illness.

## **Conclusion**

It can be concluded that scientific studies until now have yielded little evidence in support of the hypothesis that shedding tears improves mood or health directly, be it in the short or in the long run. This is not to say that crying is a useless behavior. It has strong effects on the environment, promoting comforting and helping behavior, and possibly strengthening attachment.



In that way crying might thus serve both problem-focused and emotion-focused coping functions. However, its effects on health status need further study with adequate attention to the possible pitfalls and drawbacks adhering to the research design that is chosen. One needs to be aware that only experimental designs allow for strong statements about cause and effect relationships. Since most studies concerning crying and health are correlational in character, interpretational difficulties are likely to arise. These could be due to a contaminating “third” variable, or to problems in determining the direction of a causal relationship, as we tried to show in the five explanatory models presented above. It is clear from this discussion, however, that the relationship between crying and health is an important and interesting challenge for investigators. Until enough properly designed studies have been carried out, any statements about the presumed relationship do not surpass the level of mere speculation.

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Figure caption

Figure 1.

Schematic summary of different possible models for the study of the crying - well-being/health relationship.