

## original article

**Crying as a multifaceted health psychology conceptualisation: crying as coping, risk factor, and symptom****Ad Vingerhoets<sup>1\*</sup> and Lauren Bylsma<sup>2</sup>**<sup>1</sup> Department of Psychology and Health, Tilburg University, Tilburg, the Netherlands<sup>2</sup> Department of Psychology, University of South Florida, Tampa, USA**Abstract**

We summarize popular and pre-scientific conceptions of the relationship between crying, well-being, and health, and we review the scientific literature on this topic. It appears that crying can be conceived in three distinct ways: (1) crying as coping; (2) (non)crying as a risk factor for the development of disease; and (3) crying as a sign of distress and a symptom of disease. First, the focus is on whether crying brings relief and facilitates emotional recovery after stressor exposure. Next, we discuss the evidence addressing whether crying or its chronic inhibition is associated with increased risk of developing health problems. Finally, we address crying as a sign or symptom of distress, pain or disease. It is concluded that the question regarding whether crying serves a coping function and brings relief has yielded seemingly contrasting findings, dependent on the design of the study. Concerning the second and third issues, there is a lack of sound studies. We present evidence for a relationship between neurological disorders and crying. The relationship between crying and psychiatric disorders such as depression is less clear. There is also mainly anecdotal evidence of increased crying in a wide variety of health problems, which may reflect symptoms of disease, co-morbid depression, adjustment problems, or side effects of treatment. Furthermore, some recent studies suggest a positive effect of crying on health status in certain patient groups. More systematic and well-designed studies are needed to clarify the relationship between crying and health.

**Introduction**

Crying is a universal and uniquely human way of expressing emotions. It permeates our lives from the very beginning (e.g., “the primal scream”) until the end, when we die. Important emotional events are typically associated with the shedding of tears, but since such major events are rare, most crying actually occurs by rather common everyday experiences. This suggests that not only the specific causal event is relevant, but other contextual factors and person characteristics also play a significant role in crying behaviour.

**Ad Vingerhoets**Professor of Clinical Health Psychology  
Tilburg University**Lauren Bylsma**Clinical psychology doctoral student  
University of South Florida

The capacity to shed emotional tears has surprisingly received little serious attention from the scientific community, and the little research that has been done has employed very different theoretical viewpoints with a lack of connection between the studies. This may explain why we know rather little about this intriguing phenomenon, and many obvious questions concerning antecedents, moderators and consequences of crying cannot yet be answered adequately. In this contribution, the focus will be on the relationship between crying and health. For health psychologists, crying can be conceived of in at least

\*Corresponding Author: Ad Vingerhoets; email: Vingerhoets@uvt.nl

(Continued on page 69)

**Vingerhoets, A., & Bylsma, L. (cont'd)***(Continued from page 68)*

three distinct ways. First, crying may be considered a coping behaviour. In addition, as a logical consequence, crying or the chronic inhibition of tears may be perceived as a risk factor for the development of specific disorders. Finally, crying may be regarded as a sign of distress or pain or a symptom of disease.

It is important to distinguish between the immediate effects of crying (versus suppression of a single crying episode) and the long-term effects of regular crying (versus chronic inhibition of tears). First, there is the claim that crying has immediate positive effects upon our mental and physical well-being, and therefore brings relief. This idea dates back to as far as 2000 years ago, when the Roman poet Ovid voiced this conviction when stating that "It is a relief to weep; grief is satisfied and carried off by tears." More recently, Breuer and Freud (1968, p. 8) referred to tears as "involuntary reflexes that discharge affect so that a large part of the affect disappears." According to Menninger, Mayman and Pruyser (1964), crying may be considered as perhaps the most human and most universal of all relief measures. Such quotes seem to reflect the conviction that crying may be a rather effective way of coping with stressful situations.

However, crying is not only expected to bring immediate relief, but long term benefits as well. In common lore, the chronic inhibition of tears has been claimed to endanger our physical health. As shown by Cornelius (1986), in a review of 130 years of popular media, the conviction prevails that crying should be regarded as beneficial for one's health, whereas withholding one's tears may have damaging health effects. There is an even longer history of the presumed association between crying and health in writings on medicine and the arts. For example, as early as 1694, the Dutch physician and philosopher Franciscus Mercurius Van Helmont wrote about the necessity of crying after bereavement in order to prevent the development of distemper or sickness. Similarly, the famous British psychiatrist Sir Henry Maudsley (1835-1918) stated that "Sorrows which find no vent in tears may soon make other organs weep" (Lutz, 1999, p. 119).

It is clear that popular belief regards crying as beneficial to one's health; however, what is the scientific evidence? In what follows, we will focus on the relationship between crying and health from three different perspectives: (1) crying as coping: the immediate effects of crying on mental and physical

well-being; (2) the long-term health effects of the expression and inhibition of crying; (3) the relationship between distress or pain and crying, as well as crying as a sign or symptom of disease.

**Crying as coping: Does it bring relief and promote physical recovery?**

Concerning the immediate effects of crying on one's mental well-being, mixed results have been reported, varying by the design of the study. Specifically, laboratory studies have demonstrated negative effects as a result of the shedding of emotional tears. People who cried while watching a sad film, without exception, felt sadder and more depressed afterwards than people who did not cry (see Cornelius, 1997; Stougie, Vingerhoets & Cornelius, 2004 for a review). In contrast, naturalistic studies in which participants are asked to report on their last crying episode using survey or experiential sampling techniques yield a very different picture. For example, as reported in Bylsma, Vingerhoets, and Rottenberg (under review), when participants were asked about their most recent crying episode, just over 50% reported feeling better mentally after crying compared to how they felt before crying, whereas approximately one-third reported feeling better physically after crying.

How can we explain these seemingly contrasting findings? Are the retrospective self-reports biased? Do they rather reflect what the people think that should have happened rather than their actual feelings? Alternatively, do the positive effects of crying occur gradually over an extended period of time, making the timing of the measurements in the quasi-experimental studies not optimal, since they generally measure effects a very short period of time after the crying is elicited? Could it be that the "no pain, no gain" hypothesis is valid, stating that the crying individual first has to experience the deepest and most negative feelings, before the recovery sets in? May people feel embarrassed when crying in the laboratory? Cornelius (1997) further emphasizes that crying in response to a film does not bring any resolution to the situation that precipitated the crying episode, whereas in real life crying may have an impact on individuals who are present, stimulating them to change the conditions that caused the individual to cry. Alternatively, the relief might also result from the comforting words and behaviours of

*(Continued on page 70)*

the other individuals in the social environment, providing an indirect benefit of crying. Indeed, in an international study spanning 37 countries and including over 5500 respondents, Becht and Vingerhoets (2001) established that self-reported mood improvement was negatively associated with the shame induced by crying. Also using data from this same set of respondents, Bylsma et al. (under review) found that self-reported mood improvement after crying was related to receipt of positive social support, resolution of the situation that caused the crying to occur, or experiencing a new perception of the situation. Furthermore, suppression of crying and the experience of shame during crying were negatively related to mood improvement after crying. Additionally, Cornelius (1997) showed that there was an association between the self-reported effects of crying on one's mood and the effects of crying on the situation or the relationship with the other present people. However, the self-reported mood effects of crying alone compared with crying with others present revealed that, contrary to expectations, there was no difference in the effects of shedding tears on one's well-being between these two situations. In conclusion, the issue of the immediate effects of crying on one's mood is not yet definitively settled, and it is not yet clear to what extent the reactions of the social environment play a role.

There are also a few studies in which cardiovascular activity has been measured before, during, and after crying, although it is not easy to determine the precise onset and offset of crying

behaviour (see Hendriks, Rottenberg, & Vingerhoets, 2007). These studies unequivocally show that crying is associated with physical arousal. However, there is also some evidence that in a later phase crying is associated with increased activity of the parasympathetic nervous system, which is linked specifically with recovery processes and relaxation. However, Hendriks et al. (2007) could not establish whether the increased parasympathetic activity followed or preceded the crying; therefore, a causal relationship cannot yet be established. Finally, there are two studies (Labott, Ahleman, Wolever, & Martin, 1990; Martin, Guthrie, & Pitts, 1993) investigating the effects of crying on secretory immunoglobulin A (S-IgA), an immunologic variable that serves as a first-line defense against invasion by potential pathogens. When people cried in this study, they exhibited significant decreases of S-IgA levels, representing decreased protection against pathogens, but these decrements were not found when subjects only felt sad but did not cry.

In conclusion, we have not found strong evidence that crying has a relaxing effect, although there is also no evidence unambiguously against this view. It is nevertheless important to consider the value of crying as a coping mechanism, which helps an individual deal with stress. As summarized in Figure 1, crying may theoretically be considered a unique coping behaviour, because it may unite in itself the induction of social support, as well as both emotion-focused and problem-focused coping strategies.

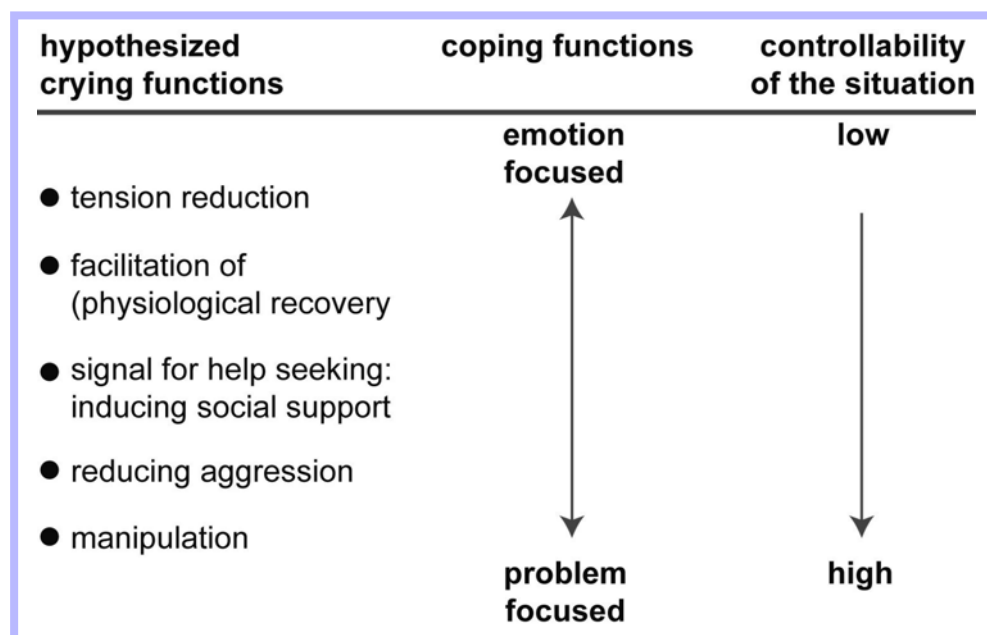


Figure 1

(Continued on page 71)

**Vingerhoets, A., & Bylsma, L. (cont'd)***(Continued from page 70)***Crying as a risk factor: Does the inhibition of crying promote disease development?**

Regarding the second question, whether the chronic inhibition of crying may put individuals at risk for the development of health problems, two kinds of studies are important to consider. First, one may wonder whether people who never or rarely cry have a greater risk of developing health problems. Alternatively, similar to the so-called “buffer-hypothesis” of social support (Cohen & Wills, 1985), one could speculate that the hypothesized beneficial effects of crying are only present when exposed to emotionally stressful events, whereas crying has no relation with health if one is spared the confrontation with emotionally demanding situations. Unfortunately, the few relevant studies all suffer from serious methodological limitations, preventing definitive conclusions from being drawn. We have conducted a few studies to establish the relationship between crying proneness or frequency and self-reported health status, but these studies typically found zero or very weak negative correlations, suggesting, if anything, that people who cry more often feel less, rather than more, healthy (see Vingerhoets & Scheirs, 2001, for review). There is one study (Labott & Martin, 1987) particularly designed to examine the buffer hypothesis of crying. They demonstrated that individuals with a high number of stressors who cried frequently did not feel better – actually even worse – than comparable persons who failed to cry in similar conditions.

Interestingly, some remarkable findings have been reported in clinical populations, demonstrating a beneficial effect of shedding emotional tears on physical health. For example, Saul and Bernstein (1941) and French (1939) found intriguing relationships between crying and course of urticaria (i.e., hives) and asthma, respectively, suggesting that crying reduces the symptoms of these conditions. Kepecs, Robin and Brunner (1951) reported a relationship between crying and exudation into cantharides blisters in the skin, showing that the inhibition of crying was followed by an initial drop in the exudation rate, later followed by an increase if the inhibition continued. More recently, a study among patients with rheumatoid arthritis revealed that shedding tears reduces the negative influence of stress on the neuroendocrine and immune responses in peripheral blood (Ishii, Nagashima, Tanno, Nakajima, & Yoshino, 2003), and Kimata (2006) showed that

crying reduced allergic reactions. Furthermore, an experimental rat study (Ilinskii et al., 1985) even suggests that stimulation of the lacrimal gland may have a positive effect on wound healing. However, these intriguing findings need replication.

In addition to the question regarding in which conditions crying may be beneficial (see Rottenberg, Bylsma, & Vingerhoets, submitted) it is important to have insight into the putative underlying mechanisms that might be responsible for the supposed positive effects of crying. The following four potential relevant hypotheses have been formulated. The first idea, mentioned earlier, is that crying stimulates the activity of the parasympathetic nervous system, which is connected to relaxation and recovery, but also to helplessness and giving-up (Vingerhoets, 1985). Along these lines, Rottenberg, Wilhelm, Gross, and Gotlib (2003) and Hendriks et al. (2007) have demonstrated that crying is indeed associated with a parasympathetic rebound mechanism. Another possible mechanism that has received much attention in the popular media is Frey's (1985) idea that tears function in the removal of toxic waste products (e.g., stress hormones), which are released in the blood when we are in distress, which is presumed to result in a better mood and perhaps even better health. However, the amount of toxic waste products removed by tears is very small at best and tears are mainly reabsorbed again in our nose. A third idea is that sobbing increases the amount of inspired cold air, which may result in the cooling of the hypothalamus, or that the accompanying changes in the facial muscles and vasculature by facilitating or inhibiting neurochemical processes in the brain influence one's mood (McIntosh, Zajonc, Vig, & Emerick, 1997). Finally, based on preliminary animal work by Panksepp (1998), one could speculate that crying promotes the release of substances like endorphins that could produce positive mood effects; however, we are not aware of any direct test of this hypothesis.

In conclusion, review of the literature reveals a serious lack of well-designed studies directly relevant to the questions of interest. There is currently no evidence suggesting that the inhibition of crying is causally related to the development of health complaints; however, given the poor quality of the studies conducted until now, there is neither any strong evidence for or against this idea.

*(Continued on page 72)*



## original article

**Vingerhoets, A., & Bylsma, L. (cont'd)***(Continued from page 71)***Crying as a sign of distress or pain or symptom of disease states**

There is little doubt that the crying of babies serves the purpose of communicating to their caregivers that they are in pain or distress and need assistance. However, the crying of babies is likely more than simply an alarm signal (Furlow, 1997). Most notable is that babies with a compromised health status, such as neurological disorders, disturbed metabolism, and infectious diseases cry not only more often and more intensely but also at a higher pitch than healthy babies. The crying signal thus provides the parents with information about the health status, or in evolutionary terms, the fitness of the baby. Although there is little human research addressing this issue, it has been demonstrated in twin studies that mothers react faster to the crying of the healthy baby than to the distress vocalizations of those with a compromised health status (Mann, 1992).

In adults, the research on crying in pathological groups is mainly focused on neurological disorders, particularly stroke and multiple sclerosis. A significant minority of these patients suffer from what has been labeled, among other things, pathological crying or involuntary emotional expression disorder (Cummings et al., 2006). In addition, there is a limited research on crying in psychiatric disorders and other adverse health conditions, which we will briefly discuss. It is generally not clear to what extent in such cases the increased emotionality of patients reflects distress or a real symptom of disorder or disease.

**Crying and neurological disorders**

Since the end of the 19th century, clinicians have been aware that neurological disorders may be accompanied by increased emotionality and crying. The terminology for this condition is rather confusing in that many labels are used in the literature to describe this phenomenon, including pseudobulbar affect, emotionalism, emotional incontinence, pathological crying, and Involuntary Emotional Expression Disorder (IEED; Cummings et al., 2006). There is some disagreement regarding whether or not the displayed emotions accurately reflect the individual's emotional experience or just reflect a pathological motor behaviour. The behaviour is considered to be pathological because it is not appropriate to the context of situation and it may continue unabated. Others emphasize that the main characteristics of this

condition imply that the person has difficulty in keeping his/her emotions and/or behaviour under control.

A few studies have carefully analyzed the crying episodes of stroke patients, including the antecedents and the setting of crying (Allman, Hope, & Fairburn, 1992; Grinblat, Grinblat, & Grinblat, 2004). Grinblat et al. (2002) concluded that the antecedents of the crying of these patients differed considerably from that of healthy individuals; however, we feel that these findings strongly suggest that there is a quantitative but not a qualitative difference between the crying of stroke patients and healthy controls. Since it has been established that crying decreases significantly in the first year after a stroke, and these patients likely have a lot to cry about due to the major losses associated with this disorder, Mark, Van Hoek, and Vingerhoets (in press) have recommended reluctance to apply terms suggesting a disorder or pathological condition, which may unnecessarily stigmatize these patients. Despite the problems with the definition and specific diagnostic criteria of this excessive crying, it is important that health professionals recognize this condition and offer treatment, because it is clear that it may significantly interfere with rehabilitation and social integration.

**Crying and other disease conditions**

A review of the literature suggests that there are quite a few illustrations, though primarily case studies, which suggest increased crying in other patient groups as well. Several psychiatric disorders have been associated with excessive crying, including mood disorders, anxiety disorders, and schizophrenia. In addition, there are several examples of case studies suggesting a relationship between disease states or treatment and increased crying (see Vingerhoets & Bylsma, in press, for review).

Of the psychiatric disorders, depression is the most frequently associated with changes in crying behaviour. Similarly to the presumed health promoting effects of crying, it is quite easy to find quotes in the popular and (semi-) scientific literature suggesting that depression and crying are very closely linked. However, despite the popular belief in the association between depression and crying, crying has not consistently been used in diagnostic

*(Continued on page 73)*

**Vingerhoets, A., & Bylsma, L. (cont'd)***(Continued from page 72)*

interviews and measures of depression (see Vingerhoets, Rottenberg, Cevaal, & Nelson, 2007) and the research examining this relationship has been limited with mixed findings. Some studies have found that depression is associated with increases in crying or feeling like crying in both clinical and non-clinical samples (e.g., Hastrup, Baker, Kraemer & Bornsetin, 1986; Frey, Hoffman-Ahern, Johnson, Lykken, & Tuason, 1983; Rottenberg, Cevaal, & Vingerhoets, in press). However, other studies have found no relationship between depression levels and crying (e.g., Kraemer & Hastrup, 1988; Labott & Martin, 1987; Rottenberg, Gross, Willhelm, Najmi, & Gotlib, 2002). Others have suggested that very severe levels of depression are associated with less crying or an inability to cry, suggesting a non-linear relationship between depression and crying (e.g., Vingerhoets et al. 2007). In conclusion, the relationship between mood disorders and crying remains unclear; findings may vary by severity of the depressed sample and the design of the study (naturalistic versus laboratory).

In sum, crying may be seen in patients suffering from a wide variety of diseases. However, the specific status of it may differ considerably – it may be a symptom, a side effect of a treatment, the symptom of co-morbid depression, or a reflection of problems with adjustment, among other possibilities. In some cases, there seems to be a close association with mood, while in other examples, the tearfulness may come quite suddenly and the association with mood is rather loose. It is apparent that this complex picture prevents the formulation of simple advice regarding how to deal with the crying of medical patients. A careful evaluation and systematic examination of all possible causes is a first requirement.

**Conclusion**

In the present contribution, we have considered crying from different perspectives, and we have summarized and contrasted the popular lore and research evidence that has examined the relationship between crying and health. The focus was both on the immediate psychological and physiological effects of crying (“crying as coping”), suppression of crying as a risk factor for the development of health problems, and crying as a sign or symptom of a compromised health status. We have demonstrated that there is a wide gap between what the general public and clinicians believe and what actually has been scientifically demonstrated. More specifically, there is little empirical evidence

supporting the popular idea that crying brings relief or that the inhibition of crying may be damaging for one’s health. In the same vein, the notion that there is a strong relationship between crying and depression is also not supported by the current available data. On the other hand, excessive crying is a relatively common problem in patients with neurological disorders, but it is uncertain to what extent this reflects adjustment problems or is the consequence of neurological damage.

Investigators have not considered crying as an important research topic, perhaps because they considered it merely a symptom of sadness or depression. However, upon closer examination, it appears that crying is much more than simply a symptom of a negative mood state; it is a complex behaviour with unique evolutionary and developmental features, as well as remarkable intra- and inter-individual differences. For an adequate understanding and appreciation of this complex phenomenon, the collaboration of scientists with different backgrounds and perspectives is greatly needed.

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## Vingerhoets, A., &amp; Bylsma, L. (cont'd)

(Continued from page 73)

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