Sadness

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Abstract

Recent research about sadness has tended to focus on grief and depression, but the emotion sadness has not been well studied. This literature review focuses on the definition of sadness, its determinants, the way it is expressed, individual differences, consequences, its function, and modulators. Often, sadness is associated with unhappy feelings. Problems with friends, death of friends and relatives, sickness, temporary and permanent separations, problems with relatives, failure in achievement situations, bad news, solitude, and end of pleasurable experience may be reasons of becoming sad. Sadness manifests itself at the physiologic and behavioral level. Various brain structures and peripheral nervous system reactions are involved in sadness. In terms of (nonverbal) behavior, crying and sobbing are characteristics for sadness. The perception and expression of sadness can be influenced by sex and culture. Sadness does have an influence on judgments. Regarding the behavioral consequences, some inconsistencies exist: sadness leads to withdrawal from other people and activities, but sadness also facilitates seeking pleasure, which influences, among others, consumer behavior. A contrast is also shown in the adaptational function of sadness. Focusing inwards and withdrawal is a way to cope with sadness, but other scientists claim the opposite by showing that sadness elicits help from other people. Sadness is most likely to occur in combination with other feelings and emotions. Its experience and expression is also associated with the social context. Given the limited research regarding this emotion, more research has to be done to get a clearer view of the emotion sadness.

Introduction

All people know what it is to be sad. But what exactly does it mean to be sad? There is a lot of literature on depression and on grief, but the emotion sadness has not received much attention. However, there are major differences between sadness and depression and grief. Power (1999) considers grief as an extreme form of sadness and depression as a sadness-based disorder. Freed et al. (2007) agree that sadness differs in important aspects from grief or a mood disorder like depression. Depression persists for a longer period of time than sadness, from hours to months, and grief is often associated with intense yearning. Grief expresses itself in the emotions sadness and anger together and depression expresses itself in the emotions sadness and disgust together (Power, 1999).

Sadness is one of the so-called basic emotions. According to Ekman and Heider (1988) six basic emotions exist: happiness, sadness, anger, fear, surprise, and disgust. Later, contempt was added. Sadness, as one of the seven basic emotions, is a transient, normal emotion, no more to be noticeable under depression than happiness would be under mania or fear under generalized anxiety disorder (Stearns, 1993). Often, sadness is associated with unhappy feelings. Power and Dalgleish (1997), however, point out that sadness not always is a negative emotion. A lot of people like watching sad movies or listening sad music, because it feels good to weep. Scherer et al. (1994) found that sadness is the most intense experienced emotion in comparison to joy, anger, fear, disgust, shame, and guilt.

To examine sadness, the emotion has to be induced. Often, this has been done by provoking thoughts of sad events (recall). In many studies people had to answer questions about what they were thinking when they were sad or they had to report a sad event in their life. Another way to induce sadness is exposing people to sad movies and pictures. After inducing sadness, different aspects have been measured: cognitive, behavioral, physiologic, and emotional aspects. Sometimes it is difficult to induce pure sadness and inducing sadness can also lead to an ethical problem. Are scientists allowed to make their participants feel bad?

This literature review will focus on the definition of sadness, its determinants, the way it is expressed, individual differences, consequences, its function, and modulators. The purpose of this review is to explore the emotion sadness in psychiatrically healthy persons. The literature that is used, was searched with PubMed, Google Scholar, PsycINFO, and Ovid, from 1965 to 2008. The keywords/search terms, which were used, included: “sadness”, “mood”, “emotions”, “sadness and brain”. Further, the references of the traced articles were

carefully checked for complementary relevant publications.

Determinants of sadness

Whether sadness is provoked, depends on the following three key aspects: the situation, appraisal, and attribution. Specific situations and in particular the appraisal of them evoke particular types of emotional experiences. Appraisals then also contribute to the generation of sadness. When one perceives a situation as a loss, one can become sad. Another factor in the generation of sadness is attribution. It does matter who one thinks is responsible for the event, oneself; another individual or fate? (Barr-Zisowitz, 2000).

Summerfield and Green (1986) have examined which situations mainly induce sadness. The most frequently reported antecedents of sadness, from high to low prevalence, are: problems with friends, death of friends, sickness (own or others), death of relatives, permanent separation from friends, problems with relatives, failure in achievement situations, bad news (social context), bad news (mass media), temporary separation from friends, solitude, end of pleasurable experience and general depression. In comparison with the emotions joy, fear and anger, sadness is the emotion for which the antecedent situations are distributed over the largest number of categories. It is not clear whether this is a reflection of difficulty in recalling the experience of sadness or whether it is caused by some other factor. Scherer and Wallbott (1986) combined these situations in more gross categories. They found that the antecedents of sadness, from high to low prevalence, are: relationships, birth/death, body/mind centred, good/bad news, permanent separation, achievement, temporary separation, social institutions and interactions with strangers. The two most common eliciting situations are problems with relationships, particularly the ending of relationships (in many cases by death), and body-related issues, such as illness and bad news. Often, sadness is a response to a loss or not attained goal (Stearns, 1993). It is good to notice that the emotion disappointment often is caused by this as well. According to Nesse (1990) sadness is primarily associated with sickness, social rejection, loss of a friend or lover, loss of status, loss of resources, or death of a child.

Ellsworth and Smith (1988) examined the role of appraisals in the experience of emotions. Participants had to recall situations that they had appraised in certain ways, e.g., “describe a time when you felt that events were being determined by circumstances beyond anyone’s control”, and then they rated their experiences along all of the appraisal dimensions

and finally point out what emotion they felt. These authors found that perceived lack of control is the appraisal central to sadness. Sadness appears to be the most functional when the person feels helpless to cope by himself. However, it is good to notice that the results of the emotion sadness were explainable in different ways. Situational control was not seen as the only central factor in experiencing sadness.

A more specific cognitive emotion model emphasizes the role of appraisal in the generation of sadness has been introduced by Power and Dalgleish (1997): the so-called SPAARS (Schematic Propositional Associative Analogical Representation Systems) approach to emotion. The starting point for the emotion sadness is an appraisal of loss or the potential of loss. The generation of sadness can occur either as a function of the appraisal route (the schematic model), the automatic route (the associative model), or via the propositional level. When sadness is generated by the automatic route (the associative model), it is because something is associated with sadness. For example, a certain place has become associated with the emotion of sadness. When sadness is generated by the appraisal route (the schematic model) it is about thoughts that normally without context do not make someone sad. Those thoughts are caused by a holistic representation about the self: an emotional self-model. This self-model is generated by thoughts about the world, the self, and others. For example, following the death of a spouse, the model of 'self-as-alone' develops. When a situation elicits this model, one feels sad. Finally, when sadness is generated by the propositional level it occurs by propositional input, for example a movie or a novel. Propositional input can make someone sad through either the appraisal or the automatic route. The different levels can influence each other by a series of positive feedback loops. For example, an object at the associative level may trigger sadness-related propositions. These propositions can maintain the activation of the schematic model, which in turn lead to an individual remaining in a state of sadness (Power, 1999). In this way, facilitatory and inhibitory processes occur within the sadness module.

As described earlier, judgment about agency also plays a part in eliciting sadness. Anger occurs when another person is perceived as responsible, whereas sadness occurs in particular when nobody is at fault (Barr-Zisowitz, 2000). White (1998), however, points out that experiencing one emotion or the other is determined by cultural norms rather than by judgments about agency. As evidence in supporting this view he points to the many different words used for the current terms 'sadness' and 'anger' in early medieval literature. However, there is evidence against the hypothesis that agency is the distinguishing factor. For example,

consider a situation in which another person causes the problem, and after this someone gets sad. A second situation is that in which no person causes the problem, and after this someone gets angry. In these two examples agency is not the distinguishing factor, which determines one becomes sad or angry. Some anthropologists found that the differentiation between the emotions anger and sadness is not at all a question of deciding what caused the problem, but rather of knowing when, to what audience, and in what sort of language it is appropriate to feel one or the other. So then it is not about cognition about agency of attribution (Barr-Zisowitz, 2000).

Manifestation of sadness

As any other emotion, sadness also manifests itself at the physiologic and behavioral level. Sometimes, it is hard to distinguish these two levels. For example, a physiologic reaction can find expression in a behavioral reaction (e.g., crying).

To start, sadness is associated with physiologic reactions. When we speak of physiologic reactions, we can distinguish between brain activity and peripheral nervous system reactions. It may be hard to distinguish between cause and effect, when examining brain structures involved in sadness. According to Freed and Mann (2007) there is activity in more than 70 brain structures during sadness. The most prominent regions include the anterior cingulate cortex, the posterior cingulate cortex, the ventrolateral prefrontal cortex, the lateral and dorsolateral prefrontal cortex, the superior and middle temporal gyri and insula, and areas of the basal ganglia and cerebellum. These brain structures are activated after inducing sadness and thus appear to be effects and not causes of sadness. Bodenhausen, Sheppard and Kramer (1994) point out that sadness is mediated by particular structures of the limbic system. Sadness involves activation in the hippocampus. It is not clear whether this is a cause or an effect of sadness. Wang, LaBar, and McCarthy (2006) investigated the impact of mood on amygdala activation with fMRI. Participants were showed sad or happy movie clips (mood induction) and then underwent an attentional task with sad and neutral pictures presented as distractors. They found that the sad distractors during sad mood lead to enhanced amygdala activation. Further, the anterior cingulate, ventromedial and orbital prefrontal cortex, insula, and other posterior regions also showed enhanced responses to sad distractors during sad mood. Lane, Reiman, Ahern, Schwartz, and Davidson (1997) measured brain activity in healthy female subjects with PET. They induced sadness with films and recall and they found

that sadness is associated with increases in activity in the thalamus, medial prefrontal cortex (Brodmann's area 9) and the anterior insula. Further, when sadness was induced by film, they found activation of anterior and posterior temporal structures.

Najib, Lorberbaum, Kose, Bohning and George (2004) examined women whose romantic relationship had ended. These women had to recall a sad, ruminative thought about their loved one and a neutral thought about someone else they knew an equally long time. In the meantime the activity in the brain was measured with fMRI. During sadness and rumination about the loved one, there were brain activity changes in the cerebellum, anterior temporal cortex, insula, anterior cingulate and prefrontal cortex. However, the authors note that sadness about a loved one can be seen as a grief reaction and activity in the brain can be different for grief in comparison to sadness. Further, it may be possible that a break-up does not only cause sadness, but also anger. So, except measuring sadness, they possibly have measured the brain structures involved in anger as well.

Freed et al. (2007) discuss the neurobiology of sadness. During sadness endogenous opioid transmission in the rostral anterior cingulate decreases. Oxytocin supply may also be reduced. Furthermore dopamine is released during sadness. Myron and Hofer (1984) showed that, when one is sad, several different processes may be at work: an acute affective response may be distinguished from a more slowly developing disturbances of biologic and psychological organization.

Autonomic nervous system reactions have also been investigated. Scherer and Wallbott (1994) examined self-reported physiological symptoms in sadness. They provided information about subjective feeling state, duration and intensity, physiological symptoms and expressive reactions. Then, they measured ergotrophic and trophotropic arousal, and felt temperature. Breathing change, faster heart beat, muscle tensing and perspiring are characteristics of ergotrophic arousal and lump-in-throat, stomach trouble and crying/sobbing may be considered as indicative for trophotrophic arousal. People who feel sad, feel more cold and report a low ergotrophic arousal, except with regard to muscle symptom. Muscle symptom reports were above average. Sad people report higher trophotropic arousal with "lump-in-throat" as the most noticeable. Sadness is the only emotion with a very strong level of trophotrophic arousal. That may explain why it is difficult to feel sad when moving (Steans, 1993). Schaller and Cialdini (1990) also examined the role of sadness in activity. The found that sadness is associated with slow responses and low activity. Kreibig, Wilhelm, Roth, and Gross (2007) examined emotional response patterning of sadness in healthy

participants with autonomic, self-report, and behavioral measures. Sadness was induced with a film paradigm. The authors found that the response to sadness-inducing film clips was characterized by changes in both cardiovascular and electrodermal responding. Ear pulse amplitude and finger skin temperature were decreased, and electrodermal activation and diastolic blood pressure were increased. Further, in sadness heart rate decreased, and preejection period and ear pulse transmit time increased. Respiration rate was declined in sadness. When sad, one breathes slow and deep. According to these authors, these results point to a conservation-withdrawal response during sadness.

In terms of (nonverbal) behavior, crying and sobbing are uniquely characteristic for sadness (Scherer et al, 1994). When someone is sad he shows many nonverbal behaviors. This may be related to the relatively low level of control attempts for this emotion and the need to communicate this emotional state. Despite the fact that someone who is sad shows many nonverbal behaviors, he shows little verbal behavior. Sadness is the most silent emotion, together with fear (Scherer et al, 1994). Cunningham (1988) has demonstrated that people in a sad mood more often wanted to sit and think, be alone and take a nap. Sadness is an emotion without an apparent action component (Brehm, Brummett & Harvey, 1999). Further, when sad, the face becomes pale, the muscles flaccid, the eyelids droop, the head hangs on the contracted chest, the lips, cheeks and lower jaw all sink downward and the breathing becomes slow and is often interrupted by deep sighs (Darwin, 1872/1965).

Individual differences

Sadness is not always the same in all people. Different individuals can perceive various indications as causes of sadness. People also can perceive and express sadness differently. Two important factors, which can influence the perception and expression of sadness, are sex and culture.

Sex

There has not been a lot of research about sex differences and sadness. Most research is about sex differences and depression. Nolen-Hoeksema (1987) developed a response style theory, which states that women ruminate on sadness more than men. Further, it states that men distract themselves from sadness more than women. These response styles are not assumed to develop through differences in nature, but through differences in nurture. The socialization of sex-appropriate behavior plays an important part. Conway et al. (1990)

examined the relation of sex-role orientation to response styles in an adult sample. They found that higher femininity was associated with more rumination on sadness and higher masculinity was associated with more distraction from sadness. This study demonstrates that both sex and sex-role orientation are related to individuals' response styles to sadness.

Culture

Another factor that can influence sadness is culture. According to Barr-Zisowitz (2000) the emotion sadness is known in most cultures and societies. In Asian societies sadness is highly valued and associated with a step in the direction of salvation. Another factor regarding societies thinking about sadness has something to do with how they perceive help (Barr-Zisowitz, 2000). This can be explained by on the one hand individualistic societies and on the other hand collectivistic societies. In collectivistic societies people more often want to help the sad individual than in individualistic societies, but such societies have less awareness of sadnesses for which a collective response is not expected. In individualistic societies people more often want individuals to take care of themselves (Barr-Zisowitz, 2000). They often perceive someone who gets help as ill or different. This can influence the expression of sadness in these cultures. Matsumoto, Hee Yoo and Fontaine (2008) examined the relationship between emotional display rules and individualism versus collectivism. They found that sadness is expressed the most in in-groups relative to out-groups and that individualism was negatively correlated with sadness, which means that sadness (a negative emotion) is less expressed in individualistic cultures in comparison with the expression of this emotion in collectivistic cultures. Stearns (1993) also draws a line between collectivistic and individualistic societies. Collectivistic cultures want to solve the problems together and individualistic cultures want to solve their own problems. Barr-Zisowitz (2000) points out that in some individualistic societies sadness is seen as passive and as a weakness, while anger is seen as active and a strength. Some cultures do not consider sadness as negative. It implies patience and humility (Barr-Zisowitz, 2000). In some countries there are different words for anger and sadness caused by another person and words for these emotions not caused by another person. That is why some cultures will ask the question 'Who did it?' instead of 'What is the matter?' (Stearns, 1993). It is clear that sadness is not a negative emotion in all cultures and the society's culture and social structure has something to do with how a society perceives and recognizes sadness.

Scherer and Wallbott (1994) describe two views to consider emotions: universalism

versus differentialism. Darwin (1872/1965) promotes the universal view of sadness: As said earlier, he points out that regardless the culture or race one belongs, when someone is sad, the face becomes pale, the muscles flaccid, the eyelids droop, the head hangs on the contracted chest, the lips, cheeks and lower jaw all sink downward and the breathing becomes slow and is often interrupted by deep sighs. He especially promotes the universal view with the obliquity of the eyebrows and the depressed corners of the mouth in all people over the world when sad. Obviously, he sees emotions as having important adaptational functions, which is relatively invariant over races and cultures. On the other hand the differential view exists, according to which emotions are different in each culture in terms of physiological symptoms, expressive behavior, motivation and subjective feeling, because each culture uses different language labels (Scherer et al., 1994). Scherer et al. (1994) provided major arguments against either of these views. Against the universalist view there is the notion that emotions are socially constructed. Against the differential view there is the notion that emotions are not different in each culture, but the emotions are expressed on various dimensions (Scherer et al., 1994).

Consequences

Sadness can have a number of short-term and long-term consequences. It has an impact on cognitions, which can influence judgments and it may facilitate certain behaviors.

Cognitive consequences

Bless, Schwarz and Wieland (1996) gave participants in different mood states (happy, angry, sad) positive or negative individuating information and positive and negative categorical information about a target person. Individuating information implies a person description, like a description of six positive and two negative behaviors (positive individuating information), while categorical information implies a category label, like a Greenpeace follower (positive category condition). They found that individuals who feel sad tend to use bottum-up, data-driven processing strategies, whereas happy people tended to use top-down, theory-driven strategies. That is why sad people are more influenced by individuating information and less influenced by stereotypes and categorical information. Bodenhausen et al. (1994) found exact the same results. They examined effects of negative affects (anger and sadness) on social information processing. In a first experiment, they showed that sad people think more systematically and therefore do not use stereotypes for

social judgment. In a second and third experiment, participants had to choose between essays from a low expertise source (e.g., a student) and a high expertise source (e.g., a scientist). Sad people disagreed more with a highly credible source then did angry or neutral mood subjects. Sad people are more prone to thoughtful, detail oriented analysis of social information. So they do not only use global cues, like source cues. In addition, they also are more focused on themselves. It is more a 'me-emotion' rather than an 'it-emotion', meaning that the focus in sadness is on the self and not on external causes (Stearns, 1993). Furthermore, sadness might activate negative concepts and therefore produce a tendency toward more negative judgments on social perception (Bodenhausen et al., 1994). Johnson and Tversky (1983) compared judgments of people in different emotional states and found that a negative emotional state increased the likelihood estimates for negative events. When in a negative emotional state (sadness and anger), one find it more likely one will contract cancer, for example. In addition, negatively framed messages will be more impactful when one is in a negative emotional state, because one will overestimate the likelihood of occurrence (Wegener, Petty, & Klein, 1994). Sad individuals also perceive the world as a sad place and that is why they think that sad events are more likely to occur (Rucker & Petty, 2004). In conclusion, sadness does have an influence on judgments.

Behavioral consequences

Scherer et al. (1994) found that sadness leads to withdrawal from other people. Brehm et al. (1999) also found that sadness feeds the urge to withdraw from other people and other activities as well. Ellsworth et al. (1988) also consider sadness as associated with a lowering of attention to the outside world. According to these authors, attention is focused inward. Cunningham (1988) also emphasizes that a sad person has a decreased attention to the outside world, which conserves energy.

Raghunathan and Corfman (2004) discuss two theories to examine what kind of behavior people show, when sad: the 'Mood repair theory' and the 'Affect-as-information theory'. According to the 'Mood repair theory' people seek pleasurable stimuli to try to eliminate negative moods, for example people go shopping to cheer themselves up. According to the 'Affect-as-information theory' people notice that something is wrong and then study the environment in an attentive manner to try to better understand what is going on and control it. These theories sometimes result in different predictions of behavior. For example, when someone in a sad mood can choose between having an organizer and playing a videogame.

People who behave according to the 'Mood repair theory' would go for the videogame, whereas people who behave consistent with the 'Affect-as-information theory' would go for the organizer. To explain this difference, one can attend to task characteristics. When the task would provide opportunities for mood repair individuals would behave as predicted by this theory, but when the task does not provide opportunity for mood repair, negative mood promotes behavior as predicted by the 'Affect-as-information theory' (Bodenhausen, Mussweiler, Gabriel, & Moreno, 2001). Raghunathan et al. (2004) provided a new explanation: 'whether a negative mood leads to seeking pleasure or to displaying greater attentiveness, depends on the type of mood state: sadness leads to seeking pleasure (mood repair) and anxiety leads to greater attentiveness (affect-as-information)'. So they introduced the so-called 'DADE-model': The Different Affect – Different Effect (DADE) Model. In their first experiment they let the participants imagine that their mother just died (sadness condition), they let the participants imagine that they may have cancer (anxiety condition) and they let the participants read about some regular person (neutral condition). Then they had to choose between two things to do: having dinner with friends (pleasure) or meeting with a plumber to fix a leaking sink (attentiveness). The first experiment did confirm their hypothesis of the 'DADE-model'. People in the sadness state preferred having dinner with friends and people in the anxiety state preferred fixing the sink. In the second experiment the participants were assigned to one of the three mood conditions: sad, anxious, and happy. Then they had to read an essay on caffeine consumption and did a recall task. The sad participants produced greater recall of positively than negatively valenced stimuli, which suggests that sadness promotes seeking pleasure. These results support the 'DADE-model', but contradict earlier results, which state that sadness leads to withdrawal, not seeking pleasure. Schaller et al. (1990) reported that sad individuals actively search for an instrument toward mood repair. An important subject of research is helping. Sad individuals actively assess the potential positive aspects of helping to repair their moods.

As mentioned above, some studies found that sadness leads to withdrawal from other people and activities (Brehm et al., 1999; Scherer et al., 1994), whereas other studies suggest that sadness facilitates seeking pleasure (Raghunathan et al., 2004; Schaller et al., 1990). Seeking pleasure and withdrawal from other people and activities seem incompatible. The question is how one can reconcile this with each other.

When the theory of seeking pleasure is true, it can have an influence on consumer behavior and persuasion. Gardner (1985) shows that consumers in a sad mood choose to shop

to cheer themselves up. She also shows that sad individuals contribute the least to charity, reward themselves less and have a hard time resisting temptation. The difficulty of resisting temptation can be the cause of the shopping behavior. Cryder, Lerner, Gross, and Dahl (2008) recently tested people's spending judgment when they felt sad. They induced sadness with a brief video about the death of a boy's mentor. The control group watched an emotionally neutral clip. The sadness condition participants had to describe how the situation in the movie would affect them, when it would happen to them. Self-focus words (e.g., I, me, my, myself) were measured. Then, the participants of both groups were offered the opportunity to trade some of their $10 participation money to buy a bottle of water. The results showed that the sad people offered significantly more money for a bottle of water. The results further demonstrated that sad people are more self-focused and that the more self-focused people are the more likely they spend more money. Interestingly, the sadness-induced individuals insisted that the emotional movie did not affect their spending behavior. The results show the opposite, demonstrating that the phenomenon happens without awareness. The authors conclude that sadness causes people to become more self-focused on themselves. This self-focus makes people feel that their possessions are worth little. To compensate this feeling, they are willing to spend more money to feel better about themselves.

Petty and Cacioppo (1986) have introduced the Elaboration Likelihood Model (ELM) of persuasion. This model explains the multiple processes by which affective states can influence attitudes. Based on this model, Rucker et al. (2004) predicted that individuals will have a preference for activity to passivity when in an angry compared to a sad emotional state, because sadness is accompanied by a state of deactivation. It was anticipated that sadness leads consumers to prefer events that do not require action. They manipulated participants' emotional states (sadness-anger) and randomly assigned the participants to receive advertisements of an active vacation resort or of a passive vacation resort. When participants were induced to be sad, they had a preference for vacation resort advertised as a place of passivity over one advertised as a place of activity. These findings suggest that sadness leads to a preference for passivity because inaction is needed to facilitate self-focus and because the desire to repair the negative state exists. These results are in conflict with the results of seeking pleasure as well. To get a better understanding of these inconsistencies, more research has to be done.

The adaptive function of sadness

According to Darwin (1872/1965), and Nesse (1990) emotions have an adaptive function and they have been important for the survival of mankind. They make communication possible, they can provoke sympathy in others, they give vividness and energy to our spoken words, and they reveal the thoughts and intentions of others more truly than words. The function of emotions is to allow an individual to have a certain plasticity and adaptability in adjusting to the world (Darwin, 1872/1965). Emotions thus both have important inter-individual and intra-individual functions. The inter-individual functions allow a person to elicit certain reactions from other people (e.g., emotive support). The intra-individual functions allow a person to adapt more easily to the situation, give information about a person's psychological state and derive comfort.

Concerning the adaptive function of sadness, much research has been done. For example, a lot of investigation has been done on the question whether the emotion sadness is associated with an increase or a decrease in attention (Barr-Zisowitz, 2000). Ellsworth et al. (1988) perceive sadness as not caused by another person. That is the reason why they consider sadness as associated with a lowering of attention, because attention does not go out to another person or the outside world, but is focused inward. As described earlier, Cunningham (1988) also emphasizes that a sad person has a decreased attention to the outside world, which conserves energy. This energy can be used for focusing on solving the problem. So the level of attention to the outside world decreases, but the attention to the inside increases. Sadness has the function of supporting constructive self-examination (Cunningham, 1988). According to Nesse (1990), a sad person is pessimistic, socially withdrawn, excessively realistic about personal abilities, and has little initiative for new relationships or projects. These characteristics are of adaptational value when one uses these characteristics to regulate one's energy and social investments. In other words, an individual can use his energy when activity pays off well, instead of at times when activity will be wasted. Nesse (1990) further points out that sadness has a motivational function. When a situation or an action made an individual sad, in future, he will try to avoid such actions and situations. Power (1999) emphasizes other social and personal functions of sadness. An important social function of sadness is that it may lead a person to make emotional and practical demands on others. It can thereby strengthen social bonds and lead to altruism because it induces sympathy or pity in others. An

important personal function is the increase of self-focus. The individual may assess priorities given to important goals and roles in the light of an experienced loss or the possibility of such loss. Such assessments may help people to alter the balance of their lives. Stearns (1993) also points to the function of self-focus in sadness. She views the function of self-focus as providing the individual with feedback on how well things are going, probably in order to allow the person to pay more effective attention to the pursuit of his goals.

As described earlier, Bodenhausen et al. (1994) demonstrated that sad people use more systematic, detail-oriented strategies in social perception. Schwarz (1990) presents an alternative interpretation of this phenomenon. He argues that sadness, because it is associated with problematic life circumstances, is likely to trigger cognitive strategies that facilitate problem solving. By thinking more systematically about the social environment, sad people will more likely find solutions for their problems. In other words, sad people think more systematically in the interest of remediating their problems. Scherer et al. (1994) also regard sadness as an emotion that helps people with recovery and readjustment to loss. When one experiences a negative event, one can evaluate one's thoughts and feelings about the event to cope with it. Scherer (1984) describes four facets of the coping potential of an organism: knowing the cause of the event (causation check), the amount of control over the consequences (the control check), the relative power with respect to obstacles (power check), and the amount of adjustment to the situation (adjustment check). When a negative event cannot be controlled, the sad feeling does not decline.

Freed et al. (2007) outline the adaptational functions of the emotion sadness as well. According to these authors, sadness is an universal response to the loss of an attachment relationship. They consider whether it is part of the protest or the despair phase of separation distress. The protest phase reinforces attachment and the despair phase facilitates detachment. The protest phase is characterized by autonomic arousal, hyperactivity and distress vocalizations. The despair phase is characterized by decreased speech and introversion. They found three models of sadness with relation to these phases in previous scientific literature: the caregiving model, the reunion model and the disengagement model. The caregiving and reunion model can be classified in the protest phase and the disengagement model can be classified in the despair phase. The protest phase is designed to undo losses and to maintain attachment. The despair phase can be adaptive in bereavement and facilitates detachment rather than attachment. The caregiving model (protest phase) promotes that sadness strengthens attachment by eliciting help from other people. This is an ultimate attempt to undo

the loss or separation. This model does not propose an intrapsychic function for sadness. All the adaptive power is focused on getting support and care from other people. The reunion model (protest phase) does suggest an intrapychic function and teaches individuals that reunion with the lost object or person, which makes you sad, is possible. The disengagement model (despair phase) can be adaptive when one realizes that the attachment cannot be restored. The sad person then consciously works through a process of detachment from the loved one or object (Freed et al., 2007).

When people feel sad, they want to cope with the emotion. As mentioned above, they can do this in different ways. Adequate coping can contribute to good adaptation. Rumination can be a symptom of negative mood, but it can also be a method of coping with negative mood: it involves self-focused attention. Individuals who use this method of coping are not looking for pleasant, distracting activities, but rather attempt to gain insight into their problems and their feelings (Lyubomirsky & Nolen-Hoeksema, 1993). Rumination is characterized by self-reflection as well as a constant and passive focus on one's negative emotions (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Nolen-Hoeksema, Larson, and Greyson (1999) showed that people who had a lesser sense of mastery over important events in their lives, and who were more beset by chronic stress and strain, were more likely to ruminate. These authors argued that low mastery and chronic strain lead individuals to feel there is little they can do to overcome their problems.

When one tries to determine the adaptive function of sadness in different cultures, one may note different response tendencies, e.g., the sad person's tendency to turn inward and the tendency to turn outward. When someone turns inwards, he tries to solve problems and when someone turns outwards, he tries to get help from other people. Sadness in North America and other western cultures facilitate both behaviors. In less individualistic societies one generally expects that a sad person will receive compassion and help (Barr-Zisowitz, 2000). In some societies people will receive help only for pain for which the group has scripts, like illness, death and loneliness. When one feels pain for reasons for which the group does not have scripts, individuals may be socialized to reduce pain. In other words, society then wants people to suppress the expression of pain (Barr-Zisowitz, 2000).

Sadness as an interacting emotion (modulators)

Combinations of sadness and other basic emotions

Sadness is, as any emotion, an interacting emotion, meaning that it is influenced by several aspects. One of the aspects is the combination of sadness and other (basic) emotions. Often, the question is about the pureness of the emotion sadness. Power (1999) makes clear that sadness is the emotion which most likely occurs in combination with other emotions. Sadness can occur with feelings of disappointment, defeat, disgust, anger, anxiety and even happiness. When one experiences sadness together with disgust, one will experience feelings of depression. When anger and sadness are occurring together it has something to do with temporary or permanent breaks in attachment relationships. Sadness and anxiety together make an individual feel that his possessions are shrinking and therefore fears for his capacity to deal with the future and its demands. Lastly, when one experiences sadness and happiness together, the feeling of nostalgia is experienced. Anger, guilt, fear, and sadness are often felt together. People sometimes find it hard to distinguish these emotions from each other. Stearns (1993) describes the difference between fear, guilt and anger on the one hand and sadness on the other hand as the following. Sadness usually is a response to an event that has already taken place, whereas fear anticipates an event to come. However it is not difficult to come up with examples that apparently do not fit this theory: e.g., thoughts of sad situations in the future and phobias. In these cases one gets sad due to an event to come and one gets afraid in response to a current stimulus. When someone feels guilty the self is seen as responsible for the problem, whereas someone who feels sad does not. Anger occurs when another person is perceived as responsible, whereas sadness occurs when no other person is at fault.

The role of the other: social context

Social context is another aspect that can influence the emotion sadness. People behave differently when alone or when in the company of other people. Jakobs, Fischer and Manstead (1997) examined the emotional experience as a function of social context. The emotions were elicited with two vignettes per emotion. In the ‘co-experience condition’ a friend co-experienced the events described and in the ‘observation condition’ a friend was a mere observer in the emotional situation. Further, within these two conditions, there was a condition in which a friend did not express emotions and a condition in which a friend did express emotions. There also was an ‘alone-condition’. It was found that not the presence of

others affects one's emotions, but the other person's role and the relationship with this other person affect one's emotions. Fridlund, Kenworthy and Jaffey (1992) found that the presence of a friend increased the intensity of positive feelings. However, Jakobs et al. (1997) found the opposite. They found that the presence of a friend decreased intensity of positive feelings. They also showed that when a friend expressed sadness, the respondents' feelings were affected in a similar way. When emotions were experienced together with another person, negative emotions, like sadness, were reduced or intensified. When the presence of the other was appraised as pleasant, sadness was reduced. So it is not just the presence of someone, but the social appraisal and the relationship with the other, which determines the effect and the intensity of the experience.

Discussion

This literature review focused on the emotion sadness. As we have seen, sadness is an emotion that has not received much attention from behavioral scientists. Grief and depression are more common research subjects. Clearly, the emotion sadness is different from grief and depression. This literature review provided insight into the features of sadness, its determinants, the way it is expressed, individual differences, consequences, its function, and modulators. Sadness usually is perceived as an unpleasant emotion, with a few exceptions. It is caused by particular situations, e.g. problems with friends, death of friends and relatives, sickness, temporary and permanent separation from friends, problems with relatives, failure in achievement situations, bad news, solitude, end of pleasurable experience and general depression. As any other emotion, sadness also manifests itself at the physiologic and behavioral level. Studies on the behavioral consequences of sadness often have yielded opposite results, with on the one hand seeking pleasure when sad, and on the other hand withdrawal from other people and activities when sad. A contrast is also shown in the adaptational function of sadness. Some scientists show that focusing inwards and withdrawal is a way to cope with sadness, other scientists claim the opposite by showing that sadness elicits help from other people. More research needs to be done to examine these inconsistencies. The interacting aspects that are discussed were combinations of sadness and other basic emotions and the social context.

Still, several questions and uncertainties are remaining. In many studies (Raghunathan et al., 2004; Wickless & Kirsch, 1988) sadness is induced by movies, vignettes, or recall. One

can question the validity of the experimental manipulation of inducing sadness. Is the pure emotion sadness induced or are other emotions or mood states involved as well? It can be a mix of sadness and other emotions or mood states, like disappointment, anger, depression, and grief. In some research designs it is possible that except measuring sadness, other affective states are measured. One can wonder how pure the emotion sadness is. That is why more research has to be done to mood-induction-methods. The pureness of the emotion can be a problem with physiological factors as well. When measuring neurophysiological reactions, like the activity of brain structures, it is often difficult to distinguish structures involved with depression and structures involved with sadness. Frequently, it overlaps each other. Causes and effects are also difficult when assessing brain activity. Further, participants often have to report their own feelings at that moment. The reliability of self-report methods can be questioned. Participants can give social desirable answers or may find it hard to show their 'weaknesses' in reporting sad feelings. Furthermore, a lot of research has been done to individual differences, especially sex-differences, in depression. However, little is known about sex-differences and sadness. More research is needed to define differences between men and women in the experience and expression of sadness.

It is clear that more research has to be done to get a more uniform definition of the emotion sadness, in order to understand and examine the emotion more easily. A possibility to get a clearer view of sadness is using a longitudinal research design, where participants describe their feelings, cognitions and behavior every time when feeling sad during a couple of months. Such a research design can demonstrate whether participants seek pleasure, or whether they withdraw from other people and activities when sad in different situations. Thus, such a design is more than a snap-shot of a situation. Of course, in this design the disadvantages of self-report still exist. A solution can be an extension of the research from Ellsworth et al. (1988), where people do not point out emotions, but recall situations that they had appraised in certain ways and then rate their experiences along appraisal dimensions. This may be lowering the threshold of reporting sad feelings, because the accent is not on the emotion, but on the appraisal of a situation.

To conclude, in comparison with other emotions, sadness stayed behind in behavioral research. Future examination is needed to understand the emotion sadness as well as the other (basic) emotions are understood right now.

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