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20 Understanding emotion change requires an understanding of emotion causation

Agnes Moors
Ghent University

One aim of this chapter is to argue that research about the effectiveness of strategies for emotion change should be conducted in a (more) theory-driven manner. Another aim is to present a two-stage model for thinking about controlled emotion change. The chapter is structured as follows: After delineating the concepts of emotion and emotion change, I clarify the relation between emotion causation and controlled emotion change, and I present a two-stage model for controlled emotion change. Next, I consider the predictions of two theories of emotion causation about the two stages of emotion change.

Delineating concepts

Many emotion theorists agree that emotions are collections of components. These are changes in organismic subsystems. Examples are (a) a cognitive component with changes in appraisal, (b) a motivational component with changes in action tendencies (e.g., the tendency to increase contact), (c) a somatic component with changes in (central and peripheral) physiological activity, (d) a motor component with changes in gross behavior and facial and vocal expressions, and (e) a subjective component with changes in experience or feelings. Theories of emotion causation have hypotheses about how these changes come about.

Emotion change refers to cases in which one or more components in the emotional episode change with regard to their intensity (from strong to weak or vice versa) or quality (e.g., from an appraisal of low to high coping potential, from the tendency to fight to the tendency to flee, from a feeling of sadness to a feeling of happiness). Given that components already consist of changes, a change in a component comes down to a change in a change, or a second change after a first change. Processes involved in the first change may to some extent also be involved in the second change. In other words, theories of emotion causation can be useful for understanding certain cases of emotion change.

Two-stage model of controlled emotion change

Emotion change can be controlled or spontaneous. It is controlled when it is caused by the goal to change the emotion. It is spontaneous or uncontrolled when it is not caused by this goal. I focus on controlled emotion change[1]. I consider cases in which people want to change their emotion. Given that emotion is a multi-componential phenomenon, it is possible to split the goal to change the emotion into the more specific goals to change the components. A person may want to change her feelings, her behavior, or her physiological responses. In the present chapter, I focus on the case in which a person has the goal to change her feelings. This goal may be achieved by applying various strategies.

The literature contains various strategies for emotion change. I propose organizing strategies according to their targets and I consider as targets each of the components in the emotional episode plus the stimulus[2]. Examples of strategies that target the stimulus are problem solving (trying to change the stimulus), and withdrawal or distraction (moving away from the stimulus in reality or in spirit). A strategy that targets appraisal of the stimulus is called reappraisal. This consists of changing the values of appraisal variables like goal relevance (e.g., by changing goal priorities) and coping potential (e.g., from low to high). Other strategies target action tendencies or expressive behavior such as acting happy or suppressing a grimace. Still other strategies target physiological responses (e.g., taking a pill). A final set of strategies targets feelings directly (e.g., suppression or denial of angry feelings).

A strategy can be considered as a type of goal, more in particular, a goal that is subordinate to the overarching goal to change one of the components. If a person has the overarching goal to change the feeling component, she may turn to various strategies to achieve this goal. She can try to change her feelings directly, but she can also try to change them indirectly by changing the stimulus, her appraisal, her behavior, or her physiological state. In sum, in many cases, emotion change will follow two steps: one step in which the person tries to change the component figuring in the chosen strategy and another step in which this change influences the component that the person ultimately wants to change.

1 The notion of controlled emotion change has overlap with the notion of emotion regulation. Emotion regulation is broader because it includes attempts to continue an emotion in addition to attempts to change it. The present paper focuses on emotion change (consistent with the title of this volume) but most insights apply to emotion regulation as well. I further wish to note that controlled emotion change can be conscious or unconscious: It can be caused by a conscious or unconscious goal.

2 My proposal to organize strategies according to components is similar to Gross and Thompson's (2007) proposal to organize strategies according to the stage in the emotion process. Yet, my proposal does not presuppose that the components follow a fixed order. It is thus suitable to accommodate predictions from various emotion theories (not only those that assume a fixed order).

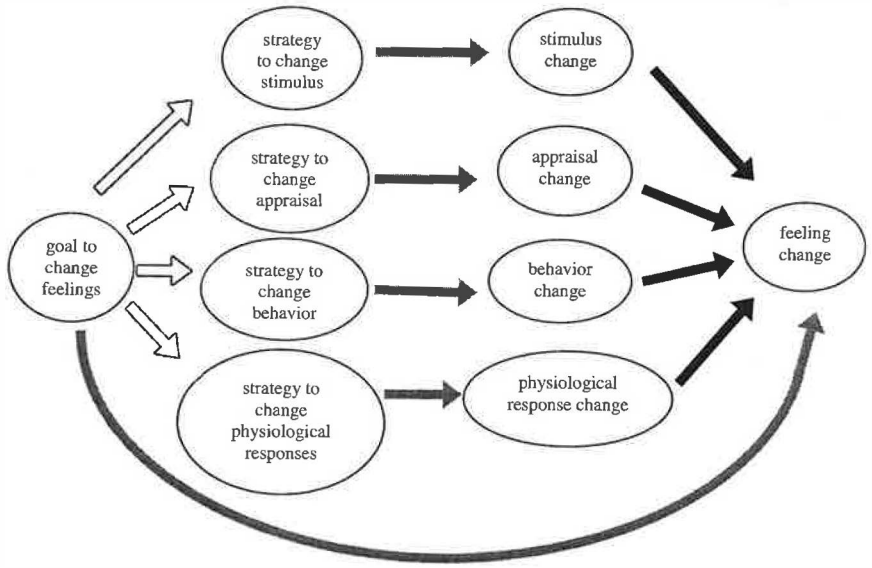


Figure 6 Direct and indirect routes for changing feelings

Effectiveness of strategies for emotion change: theoretical predictions

Based on the two-stage model of emotion change sketched above, the effectiveness of strategies for emotion change is (often) dependent on two elements. First, it is dependent on the direct controllability of the component that is targeted in the strategy (grey arrows in Figure 6). Second, it is dependent on whether a change in the component that is targeted in the strategy has an influence on the component that the person ultimately wants to change (black arrows in Figure 6). Different theories of emotion causation have different assumptions about which components can influence each other. Thus, they are likely to make different predictions about which strategies will be effective. To exemplify this, I consider the predictions of two theories of emotion causation: appraisal theories and network theories. After a brief description of these theories, I examine their assumptions about the components that influence the feeling component (cf. black arrows). After that, I examine their assumptions about the direct controllability of the components targeted in various strategies (cf. grey arrows).

Appraisal theories and network theories

According to appraisal theories (e.g., Lazarus, 1991; Scherer, 1984), stimuli are evaluated on a number of appraisal values, such as goal relevance, goal congruence, and coping potential. For example, encountering a robber may be appraised as goal relevant, goal-incongruent, and difficult to cope with. Appraisal is presented as a typical cause of the other components: Changes in appraisal drive changes in action tendencies. These are manifested in physiological

changes that prepare and support changes in actual behavior. Aspects of all these components are reflected in the content of the feeling component. Contemporary appraisal theories allow that later components feed back to earlier ones. This is called recurrence.

Many appraisal theorists endorse a dual-mode view, arguing that appraisal comes in two forms: one is rule-based; the other is associative. In the rule-based variant, appraisal values are computed for each appraisal variable and these are combined into a pattern. In the associative variant, the stimulus activates a previously computed appraisal pattern that was stored in memory. It is often assumed (but not tested) that rule-based appraisal is flexible but non-automatic and preferably operates on verbal-like representations whereas associative appraisal is more rigid but automatic and preferably operates on image-like representations.

Network theories of emotion (e.g., Bower, 1981; Leventhal, 1984) do not put forward a particular causal order for the components in the emotional episode. When an emotion occurs, a representation of the emotion is stored in memory as a network. This network consists of representations (nodes) of stimuli and components. Each specific emotion (e.g., anger, sadness, fear) has a separate network. Activation of an emotion network is the principal cause of emotions. Activation can happen via different routes: via stimuli that are identical or similar to stored ones or via any of the components that are part of the network. For example, anger can be elicited by stimuli that elicited anger in the past, but also by fighting or frowning. Activation of one node in the network spreads to other nodes. When activation in a node reaches a threshold, it triggers the actual occurrence of the corresponding component.

Network theories also endorse a dual-mode view. They consider the activation of associations as the primary cause of emotions, but they leave room for rule-based computation (often situated in the appraisal node). Importantly, both network theorists and appraisal theorists have argued that the associative process is the preferred route for emotion causation. It is not always clear why. One proposal is that associative processes are automatic and therefore difficult to stop. Another proposal is that associative processes operate on image-like representations, which are more vivid than verbal-like ones (Frijda, 1988).

Components that influence the feeling component (black arrows)

In appraisal theories, the process responsible for emotion elicitation is appraisal. Therefore, the strategy of choice should be reappraisal. Strategies that target the stimulus should also be effective because they influence appraisal. But what about strategies that target the somatic and motor components, such as taking a pill or putting on a happy face? Both components are also reflected in the feeling component. Hence, a change in these components can be expected to also color feelings. Unsolved questions are whether these other components add to the quality or only to the intensity of feelings, and if they add to the quality, whether artificially changing these other components can override the quality of the feelings as determined by appraisal. Suppose a person encounters

a goal-incongruent event but puts on a happy face. Is this enough to turn a sad feeling into a happy one?

As mentioned, network theories do not favor a particular causal order of components. An emotional network can be activated via different routes: via stimuli or via any of the components. Activation spreads from one node to all the other nodes. As such, a change in any component can produce a change in feelings. These changes go beyond changes in intensity, given that there is a separate network for each specific emotion. For example, if a person changes her facial expression from sad to happy, this should activate the happiness network including the node for happy feelings. Activation of the new emotion probably has to compete with activation of the old emotion. Putting on a happy face may not lead to happy feelings if the sadness network is activated more strongly.

Direct controllability of components (grey arrows)

(1) Directly changing one's physiological responses is virtually impossible, but they can be changed indirectly via behavior (e.g., taking a pill, doing relaxation exercises) (2) Changing behavior seems easy, but may be difficult when one has a strong emotion. According to appraisal theory, emotional behavior is caused by an action tendency, which is a kind of goal. For example, fighting is caused by the goal to fight. The goal to change one's emotional behavior has to compete with the goal that is currently active. If a person wants to hug instead of fight, the goal to hug must be strong enough to override the goal to fight. (3) Changing one's feelings directly seems difficult. This makes sense to appraisal theories because they portray feelings as the reflection of all the other components in consciousness. Choosing one's feelings is as difficult as choosing any other content of consciousness. (4) What about changing appraisals? As mentioned, appraisal can be rule-based or associative, and the associative variant is supposed to be automatic. The associative variant may thus be difficult to control. Add to this that associative appraisal is the preferred route for emotion causation and thus the preferred route for emotion change. Hence, appraisal theories do not expect reappraisal to be always effective or to be easy.

Effectiveness of strategies for emotion change: empirical data

Below, I discuss empirical data for the effectiveness of two strategies for changing feelings: changing facial expressions and reappraisal.

Strategy of changing facial expressions

In a study by Gross and Levenson,(1997) participants watched a sad, amusing, and neutral film. One group was instructed to suppress their facial expressions whereas another group was not. Facial expressions were weaker in the first than the second group, but in the first group, they were stronger during sad and amusing films than during neutral films. This indicates that facial expressions

can be changed only partially. Suppressing facial expressions had some effect on positive but not on negative feelings. It may be noted that most studies that do report changes in feelings due to changes in expressions (Strack, Martin, and Stepper, 1988) show changes in intensity, not quality, and it is often not certain that the changes circumvented reappraisal.

Strategy of reappraisal

Several laboratory studies show that reappraisal has an influence on feelings. In a typical study (e.g., Ochsner, Bunge, Gross, and Gabrieli, 2002) participants watch pictures of problematic situations (e.g., a sick child). One group is instructed to reappraise the stimuli by imagining that the problem will be solved (e.g., the child will recover) whereas the other group is not. The first group reports less negative feelings than the second group. On the other hand, there is the clinical observation that reappraisal does not always work, or often does not work. For example, spider phobics often claim they know that spiders are not dangerous, but they nevertheless feel afraid. The dual process assumptions in appraisal theories and network theories provide hints to solve this seeming contradiction.

Both theories hold that emotions are preferably elicited by an associative process. To the question why this is the case, I mentioned one proposal that refers to the automatic nature of associative processes and another proposal that refers to the image-like format of the representations in associative processes. I apply both proposals to the contradictory findings, starting with the first proposal. In the clinical case, the spider is appraised as dangerous on the basis of an associative process. New information about the spider, that she is safe, must initially be processed via a rule-based process. Associative processes are said to be more automatic than rule-based ones. This means that they are faster to influence feelings than rule-based ones. Thus, the old information that spiders are dangerous is faster to influence feelings than the new information that spiders are safe. In the laboratory study with the pictures, participants do not have strong prior associations between the pictures and certain appraisals. Therefore, the appraisals they make do not have to compete with automatic appraisals to influence feelings. Based on the first proposal, a therapy for spider phobics consists in installing a new association between spider and the appraisal "safe" and to train it so much that it becomes more automatic than the old association between spider and "dangerous".

The second proposal is that rationally acknowledging that the spider is not dangerous is not enough; the person has to experience it—as in exposure therapy. This proposal assigns a crucial role to the format of the representations involved. Representations must be in image-like, not verbal-like format. A related proposal is that it is necessary to change specific instead of abstract knowledge (Moberly and Watkins, 2006).

Conclusion

Theories of emotion causation can improve our understanding of emotion change. They can guide research and help make sense of mixed results about the effectiveness of strategies for emotion change. Turning it around, research on the effectiveness of strategies for emotion change can improve our understanding of emotion causation. It can help evaluate these theories. Caution is due, however. If one wants to use results about the effectiveness of strategies for emotion change to draw conclusions about the plausibility of these theories, one has to take into account not only the hypothesized influences among components (black arrows), but also the assumptions that theories endorse about the direct controllability of the components targeted in the strategies (grey arrows).

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21 Learning to self-generate positive emotions

Barbara L. Fredrickson
University of North Carolina at Chapel Hill

People's daily lives can brim with emotional upsets. Unforeseen obstacles, incivilities, rebuffs, insults, and arguments abound. These and other upsets often ignite the pain of anger, anxiety, or sadness, with their attendant downward spirals and destructive behaviors.

Although the link between negative events and negative emotions can seem automatic and altogether inescapable, people do have enormous choice in how they respond to the slings and arrows of daily life. What does it take for people to experience these and other upsets *without* inner turmoil or outer destructiveness? Is it possible?

Indeed it is possible. What it takes is the ability to regulate attention and cognition in the service of self-generating inner states that are more open and optimistic—states that till the soil for positive emotions to take root, ranging from serenity and inspiration, to joy, gratitude, and more. This chapter, grounded in empirical evidence, outlines why these skills are important, and how they can be learned.

The beneficial correlates of positive emotions

People who experience positive emotions more frequently than others seem to have it made. Scientific evidence documents that they are more resilient to life's adversities, more socially connected, and more successful in their personal and work lives. They're also healthier, with lower rates of hypertension and cardiovascular disease. They even fall prey to fewer viruses, like the common cold. Plus, they live longer, up to ten years longer than those who experience the least positive emotions (for an accessible review, see Fredrickson, 2009).

To the extent that people assume that trait positive affect is an immutable, biological given, encountering research findings like these can be disheartening. Still, there is reason for hope. Although heritable, evidence suggests that only about 50 per cent of individual differences in trait affect are genetically-determined, with the remaining 50 per cent reflecting a combination of life circumstances and daily habits (Lybomirsky, Sheldon and Schkade, 2005), which can and do change, especially with age. Indeed, age-related changes in emotions are striking, with younger adults favoring negatively-valenced information and