Self-Efficacy

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Abstract

Purposive actions as well as positive self-esteem presuppose corresponding self-efficacy beliefs, that is, beliefs that one has the capacity to efficiently use means that lead to desired states. On the opposite, people who perceive themselves as helpless are unhappy and are not motivated for actions. The concept of self-efficacy, as it is mostly in use today, emerged between the forties and the eighties (Heider, Rotter, Seligman, Weiner, Bandura, E. Skinner).

This article treats the main concepts related to self-efficacy, their theoretical and historical roots, their functions and practical uses, as well as developmental and educational/therapeutic aspects. The individual development of self-efficacy beliefs has its roots in early contingency experiences (starting in the first weeks after birth), in the use of degrees of freedom and in the experience of success and failure depending on appropriate causal attributions. These basic experiences also hint at the most effective educational and psychotherapeutic approaches. In front of an actual task, adults trust in their necessary abilities mainly on the basis of their memory of former experiences of comparable success (or failure, respectively). In comparison, adolescents and children are more optimistic than adults and give themselves more often a chance, even if the task is totally new and unknown to them.

Concepts

Everything that happens is caused to happen (Aristotle). Making changes means being a cause or providing a cause that produces a change. True causal changes are difficult to identify, because we are mostly confronted with causal chains and because most changes are due to a multitude of causes or conditions. A car accident may be considered as due to exceed speed, but it may also depend on street conditions, lighting, car conditions, car handling, weather, and so on. What is *the* cause? In everyday life people often choose the most salient condition or an unusual condition to be identified as cause. Here, we prefer the term condition(s). An effect is contingent upon a condition or a set of conditions if it always occurs if the condition or the set of conditions is met. Such conditions may be sufficient but not always necessary for producing the effect.

In this article we are interested in human actions as necessary conditions of change. The success of actions, too, depends on conditions. Considering person-related conditions of effective actions, we differentiate aspects like knowledge, initiative, perseverance, intelligence, experience, physical force, help from others, and more. Thus, instead of saying that an actor is able to produce a certain effect, we can say more elaborately that an actor is endowed with certain means or conditions that enable him or her to attain certain goals. Figure 1 represents a simple two-set causal chain: An actor who activates certain conditions that produce a certain effect.

We say that individuals (as well as groups) are in control of specific goals if they are able to produce the corresponding changes (horizontal line of Figure 1). More elaborately, people are in control of a specific goal if they are aware of the necessary contingencies and if they are competent enough to make these contingencies work (both diagonal lines in Figure 1). Instead of control, Bandura (1977) introduced the word efficacy, more specifically: self-efficacy. We use control and self-efficacy interchangeably.

Controlling means putting control into action. This is not equivalent to having control or being in control: People are in control of certain states or changes of affairs, if they can put control into action, even if they do not. For example, somebody has control over buying a new bicycle (having enough money, knowing where and how to execute a purchase), even if he or she does not buy it – even if he or she never in life buys a bicycle.

People may indeed be able to control certain events without knowing it; they will then eventually miss possible chances to activate such control. On the other hand, people may believe that they have control over a certain range of affairs, but in fact do not. That may make them feel good as long as there is no need to put this control into work, but they will be frustrated if they try to put their believed control into action and possibly regret not having prepared themselves for real self-efficacy.

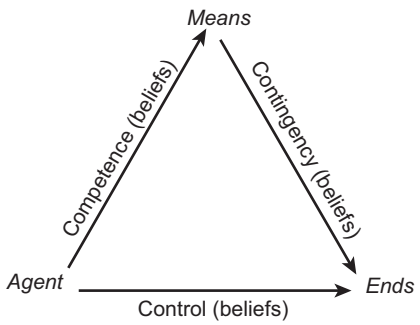

Figure 1 Means-ends relations and agency as components of control. Adapted from Skinner, E.A., Chapman, M., Baltes, P.B., 1988. Control, means-ends, and agency beliefs: a new conceptualization and its measurement during childhood. Journal of Personality and Social Psychology 54, 117–133; Flammer, A., 1990. Erfahrung der eigenen Wirksamkeit [Experiencing One's Own Efficacy]. Huber, Bern, Switzerland.

Obviously, it is important that people not only have control, but that they also know that they have control; they need corresponding control beliefs. Not being in control of an important situation is equivalent to being helpless in this respect (Seligman, 1975). The same is true, if a person only believes that he or she be not in control of an important situation. It has been proved that the psychological effects of helplessness (HL) are different depending on whether the helpless person believes being helpless for ever (chronic HL), whether being helpless is unique (personal vs universal HL), and whether HL is related to a specific domain or to most domains of life (specific vs global HL). Erroneously believing in personal and chronic HL in important domains is a tragic buffer against changes to the better. On the other side, chronic and universal HL over weather conditions does not hamper the person's self-value, because nobody can control the weather. But personal HL over important events that other people are in control of is difficult to accept (cf severe bodily handicaps). In sum, the psychological consequences of believing not to be in control over important domains are fourfold. Severely helpless people are (1) deeply sad about not having control, (2) demotivated to take initiatives or to invest effort and perseverance, (3) cognitively blind for any alternative or better view of the state of the world, and (4) devaluate themselves.

Obviously, at least in subjectively important domains, we prefer self-efficacy to helplessness. As long as we are not completely demotivated we either strive for self-efficacy in important domains (by fighting, learning, or training) or search for compensation. A common type of compensation consists of seeking help or delegating personal control (indirect control or proxy control), for example, to pay a gardener for caring one's garden or to put a doctor in charge with one's health, or to pray to God for a favor in a seemingly hopeless situation.

Another way of compensating noncontrol is to use secondary control (Rothbaum et al., 1982). While control as discussed above (i.e., primary control) consists of making the world fit with one's goals and aspirations, secondary control accommodates personal aspirations or personal interpretations of the actual state to make them fit with the world. As an example, a person who was not admitted to physics studies of his or her University may later 'find out' that working day and night in physics laboratories makes one miss the beauties of the rest of the world.

Very often people act in groups or teams. Take a soccer team as an example. Victory depends on the actions of each individual (even on the actions of the opposed team's individuals, etc.). However, each individual's action is really effective only if it is coordinated with the others' actions. Self-efficacy belief therefore also depends on the trust in others' capabilities and their coordination. The same is true for each team mate: Each of them has to believe in himself or herself and even in the efficacy as well in the self-efficacy beliefs of each other. Thus successful teams have to collectively care for their collective self-efficacy (Bandura, 2000; Stajkovic et al., 2009).

History of the Concept of Self-Efficacy

In the 1950s, Rotter (1954) proposed the concept 'locus of control,' meaning the place where control of desired reinforcement for behavior is exerted. Internal control means that the person gains reinforcement by his or her own sovereign actions. External control means that agents outside the person determine whether reinforcement occurs, possibly powerful others, situational conditions, chance, or luck. Rotter and his associates have developed valid measuring instruments that have been used in thousands (!) of studies demonstrating that internal locus of control is positively correlated with almost all desirable attributes of humans.

Fritz Heider (1944), an Austrian researcher of social perception, studied the subjective interpretations of (i.e., 'causal attributions' for) observed actions and did so by using the concepts of internality and externality. The true origin of an observed action is attributed either to the person (internal) or to person-independent conditions (external). In the first case, a person is responsible for the action outcome, in the second case he or she is not. Heider's work has triggered a large research tradition on causal attributions, whereby cause is understood in a very large sense (see above). Results of this research were of use for successful differentiations of subjective interpretations concerning experiences of control and of helplessness (*see* Attributional Processes: Psychological). Consequently, attribution theory remains an important element of self-efficacy theory.

Modern self-efficacy theory goes beyond Rotter's theory insofar as it is more differentiated (e.g., contingency vs competence, primary vs secondary, personal vs universal, chronic vs transient, specific vs global), distinctively referred to specific domains of actions (e.g., health, school), and elaborated to also include more personality aspects like motivation and development.

Self-Efficacy as an Important Element of a Happy and Successful Person

Individuals with high self-efficacy beliefs also report strong feelings of well-being and high self-esteem in general. Self-efficacy beliefs influence motivation, perseverance, social attitude, health, recovering from illness, learning efficiency, and so on (Bandura, 1997; Flammer, 1990; Maddux, 2009). It feels good to be good. Such persons are willing to take initiatives in related domains, to apply effort if needed, and persevere in efforts as long as they believe in their efficacy. Clearly, such initiatives may sometimes be unsuccessful, but more often they provide learning chances and lead to new experiences opening up new perspectives of the world and of the personal development (snowball effect). Optimistic persons with a high sense of self-efficacy do not give up easily and are able to overcome difficulties that others do not.

It is well documented that very low self-efficacy beliefs can be a basis of depression, especially if it is coupled with the conviction that not only the concerned person can change the situation but that nobody else is able to help (chronic and universal helplessness, i.e., hopelessness).

As to gender differences, in average – but only in average – females are less confident of their self-efficacy than males; the other side of the coin is that males are more often overconfident than females. It is a common finding that girls often outperform boys in school but still hold lower self-efficacy beliefs than

boys. As a consequence, girls less often show self-enhancing attribute patterns than boys, that is, have a stronger tendency to attribute failure to insufficient abilities and success to external factors. This is especially true in achievement domains that were long hold as masculine. Possibly – hopefully – new socialization patterns (new self-experience and more veridical and accurate feedback) will make these gender differences disappear (e.g., Lloyd et al., 2005).

In highly self-efficient individuals, potentially stressful situations produce less subjective stress, because such individuals are confident in having the competencies for finding ways to overcome hurdles. However, while self-efficacy beliefs act as buffers against stress, they can also – indirectly – produce stress insofar as they can induce overly ambitious individuals to assume more responsibility than they are able to cope with. Either the goals are in fact beyond their competence or the sheer quantity of chosen goals to be attained exceed the persons capacity.

Self-efficacy beliefs have also been reported to exert a positive influence on recovery from surgery or illness and on healthy lifestyles. If you believe that your health fully depends on fate or on medical art and effort, you do not personally think and care about what in your life-style could be changed to become or to stay healthy. However, if you think that personal health is at least partly a personal performance, you try to do your best.

High self-efficacy beliefs not only often root in success experience, they also produce success (Schunk and Pajares, 2009; Zimmerman and Schunk, 2009). In the school domain the circular effects between belief, effect, and belief again are easily apparent. Those who believe in themselves invest more effort and as a result of it experience more success, which in turn boosts the belief in further success. Likewise, students who are convinced of their incompetency refrain from effort (or simply feign effort) and consequently have little success, which in turn proves that they are right in not believing in their self-efficacy (circulus vitiosus). Not surprisingly, these good and bad circles have also been studied systematically in the area of sports, especially in high-performance sports (Feltz et al., 2008). Athletes as well as coaches are well advised taking lessons from these insights.

Interestingly, it has been demonstrated repeatedly and in several cultures that in most domains healthy and happy individuals tend to slightly overestimate themselves. If people are asked to compare themselves with the general population of their kind and indicate whether they are about the same (0) or healthier or more good looking or brighter (1 or even 2) or whether they feel they are below average (−1 or even −2), the average of the answers is clearly above 0. This has also been found with respect to self-efficacy: In average, people feel more self-efficient than average. Furthermore it has been found that realistic estimation of self-efficacy is rather typical for persons vulnerable to depressed mood, and clear underestimation increases the chance for a clinical (reactive) depression. Slightly overestimating one's own self-efficiency is healthy and boosting development toward the better, which allows for even higher expectations (snowball effect). However, there is a limit somewhere: Major overestimation can result in painful and harmful clashes with the reality and finally severely undermine realistic judgments.

The Development of Self-Efficacy Beliefs

Even the newborn baby has efficacy, but not really efficacy beliefs. The basic structure of the self-efficacy beliefs develops within the first 3 or 4 years. According to Flammer's (1995, 2009) analysis, the infant's development toward the basic understanding of self-efficacy proceeds through a developmental sequence consisting of the acquisition of (1) the basic event schema, (2) the elementary causal schema, (3) the understanding of personally producing effects, (4) the understanding of success versus failure in aiming at nontrivial goals, and (5) the discovery of being not only the origin of one certain change but also capable of producing such changes more generally.

The basic event schema consists in being aware that certain classes of events happen. These events are mostly very complex like: adequately sucking, smelling, tasting, and drinking milk, or moving the legs, perceiving rhythmical movements in the body, and seeing a suspended toy swinging above the head. The fact that such movements are becoming more 'rounded' and adapted, that is, that learning takes places, indicates that the baby experiences what happens. By the way, this is what Karl Bühler almost 100 years ago has defined as 'Funktionslust' and what Piaget not much later has theoretically interpreted as primary circular reaction.

The elementary causal schema is reached when babies start to recognize that two or more events hang together in the sense that one follows the other. The pleasure provided by tickling games or by seeing and then hearing objects banging on a hard surface shows that the baby is expecting effects, that is, contingency.

Soon after the second stage, the baby starts to experience herself as producing effects. She realizes that certain effects are produced by others that and some effects are their own. If they like it, then they may repeat the same action again and again; and later on the sheer visibility of a pertinent object or situation can trigger the resumption of the causal action. This is what Piaget called secondary circular reaction. Very soon, these are followed by tertiary circular reactions: Infants not only try to reach goals but also test possible means or causes through varying their actions and finding out what different changes they produce. Clearly, not all actions are successful, but this does not matter much to the baby so far, she simply tries again. Success and failure, however, have much more impact on the next stage.

Infants in their third year or so are not only happy in producing effects, but show pride in successfully reaching nontrivial goals like building a high tower with wooden game blocks. A high tower done by her mother may be admired, but a high tower done by one-self magnifies the ego. Reversely, failure despite hardly trying to reach an important and publicly visible goal results in shame: Such infants may corporally sink down in their chair and lower the eyes. Apparently, self-efficacy is more than reaching effects, it means something to the self-value.

Finally, the belief of one's self-efficacy generalizes. It is not just this or that effect one has successfully reached or not, but it is one's own personality that is effective, successful – or not with all the further consequences alluded to above.

Obviously, this stagewise development proceeds in domains that are accessible by the infant so far. A major opening of new domains comes with school entrance. As to

the domain of school success, within the second half of the first decade of life, the child learns more and more differentiations of means toward the same ends. Thus, he or she gradually abandons a global concept of simply being or not being able and singles out – probably in this sequence – (1) the factor effort (more effort is needed to solve tasks, which is a typical lesson to be learned early in school), (2) the factors individual ability and task difficulty (higher difficulty requiring more ability; higher ability allows mastering more difficult tasks), and finally (3) the understanding of the compensatory relation between effort and ability (it is possible to reach the same goals by being less capable but more hard working; not yet mastering certain tasks calls for learning and acquiring higher ability).

In adolescence and in early adulthood more lessons have to be learned; more and more domains become accessible to personal control due to increased cognitive, physical, or economic strength and social power. This is exciting, indeed. However, individuals have to permanently select from the choices that are offered to them (Flammer, 2009). Trying to control everything results in overburdening. One thing is to deselect control domains because they compete with higher priority control domains; another thing is to be forced to renounce control because no accessible contingencies seem to exist. As long as there are enough attractive alternatives available, renouncing is not very painful, but it can severely hurt handicapped individuals and old people when they lose control of important domains.

Old people are well advised not to resign too early but eventually to search for compensations. Such compensations consist of artifacts of all kinds (from memory aids to hearing aids), but they also include the above-mentioned compensations like indirect control (social resources) and secondary control. Indeed, it seems that the extent and the importance of secondary control increase with the lifetime (Heckhausen and Schulz, 1995). In old age, more and more control is taken over by care persons. A few homes for old people even take over so much control over their patients (this Latin expression means endure, bear, tolerate) that M. Baltes and Silverberg (1994) have even suggested that people in such homes adjust better if they give up personal control at all. Alluding to the concept of learned helplessness, they called such behavior learned dependency. Learned dependency helps to avoid certain social conflicts; the only remaining personal control then is the control over giving in.

The Microgenesis of Self-Efficacy Beliefs

If a person starts an action, he or she is convinced or at least hopes to be able to successfully perform. Remembering earlier experiences is probably the most reliable basis for the actual belief. However, if the person is confronted with a concrete difficult and possibly difficult task, how does he or she come to believe in being able or not being able to solve it? – This is the microgenetic question (as opposed to ontogenesis (lifelong development of the individual), the German Gestaltists called the actual or short-term building up or emergence of an idea or of a perception as 'Aktualgenese,' which we translate as microgenesis).

Even if people have had appropriate past experiences, relevant knowledge has to be activated, retrieved, or reconstructed from memory. And even then the result may be an underestimation or an overestimation of one's actual control. As an example, clinically depressive persons tend to remember more negative experiences than positive ones – even if compared with the proportion of really experienced success and failures – thus negatively biasing their expectations for further actions even more.

In a series of studies, the author has interviewed adolescent and adult subjects about several possible tasks and challenges. After the response (yes or no) he eventually asked them in a seemingly casual way 'Why?'. The results indicated that individuals most often refer to dispositional attributes, that is, ready-made generalized beliefs (i.e., 'because I am strong'). Second in frequency were references to personally experienced episodes (surprisingly, there were almost no references to models, i.e., to other people who did the same, successfully or not). However, when later asked about their confidence in believing to be able or not to be able, the subjects indicated more confidence in those control beliefs for which they had referred to concrete experiences than in those based on dispositional attributes. This in spite of the fact that they referred to dispositions more often than to experienced episodes. Also, the latencies before the yes/no answers were shorter, when the subsequent reference answer was episodical rather than dispositional. Taken together with the finding that in the oral format the episodic answers were more frequent than in the written format, these results indicate that people prefer the episodic foundation of their self-efficacy beliefs, but often do not have ready access to relevant remembered episodes. That episodical reference is taken as trustworthier is also shown by the result that people are also more confident in other people's assertion of competence if they refer to repeated former experiences than if they refer either to their general abilities or to one unique experience.

There is also an interesting interaction between ontogenesis and microgenesis. The author and his coworkers have also confronted elementary school children with the same frame of questioning. Unlike adults, children often simply asserted how they would do (i.e., being totally confident that they are able). If questioned again, they often answered – very optimistically – that they would try very, very hard. In one respect, this corresponds with earlier data from adolescents: Compared with adults, adolescents referred more to dispositions, when they positively believed in their self-efficacy, but less when they believed in their nonefficacy. It seems that adolescents – like children – are still very optimistic as to their self-efficacy unless they have experienced specific failures. They are probably not only right but also serve their developmental chances.

Another source of one's own capacity estimates (as well as overestimate and underestimate) is the actual mood state. Positive mood raises control self-efficacy belief, negative mood lowers it, which obviously has the potential of vicious and eventually virtuous circles. Failure produces disappointment and bad mood; bad mood makes failure more salient, so that the individual either avoids challenges or chooses unsolvable tasks; this produces failures and the repeated 'perception' of one's own deficiencies. The reverse is true as well: Positive

mood induces initiative, effort, and perseverance, which may lead to success, and success raises the mood – and adds another positive event to be encoded in memory.

Educational and Therapeutic Aspects

Parents and educators can influence not only the actual self-efficacy beliefs but also life-long generalized trust in one's competence. Contingent behavior by the caregivers is crucial already within the first weeks of life. Caregiver's behavior should be predictable, that is, contingent upon the baby's actual behavior – even more upon the baby's perceptions, feelings, and desires. Contingent behavior fosters not only children's happiness, but also their curiosity and their willingness to learn. This requires high sensitivity toward the child.

Fortunately, parental empathy – a basic condition for contingent behavior – is a natural gift in the majority of attentive parents. But contingent and reinforcing behavior is not always easy. External stress, health, and too frequent changes in caregiving teams make the educational task difficult. In addition, if the baby shows unorganized behavior (so-called difficult babies), the caregiver's task is not only difficult but often less rewarding.

Infants and children need freedom for experimentation. Caregivers are to give the necessary freedom, but to prevent from dangerous experimentation. With the infant getting older, the caregiver has to help her to understand success and failure adequately (causal attribution): An action might be too difficult at a certain age or the young child may be encouraged to learn or simply to try again and invest more effort (Schneewind, 1995).

Clearly, self-efficacy beliefs need to be carefully maintained or even boosted in adolescents and in adults as well. Giving a good job interview, delivering a public speech, or successfully participating in a sports competition can be much helped by a sound belief in one-self. The same is true for elite sports and the systematic and enduring training that needs perseverance and optimism even in case of setbacks. Feltz et al. (2008) are a perfect example of how to train systematically self-efficacy beliefs of athletes, teams, and even coaches. Evidently, not only individuals need to believe in their own efficacy, but teams as well.

Psychotherapy with persons whose self-efficacy beliefs are severely undermined is difficult. Helpless people not only tend to interpret failures to their disadvantage, they also often play down their contribution to eventual success. They therefore lack or even avoid initiatives. Persons who have lost self-confidence immunize themselves against being hurt by not trying anymore, by fatalistical attributions, and even by recalling their biography in a way that is consistent with and justifies their dysfunctional beliefs. Teaching and trying to convince them that they are really capable despite their belief not to be does not help much. Helping them to recall from memory prior success experiences instead of being impressed by failures only is (a bit) more efficient. More efficient are new and successful experiences.

Conclusion

Within the past decades, theory and research have established self-efficacy beliefs as important elements in the understanding of human action and human well-being in a very large sense. The theory is rather well established, empirically founded, and linked to a multitude of other scientific domains. Further steps may include more differentiation between life domains, between cultures and – if possible – between historical times. Given the importance of life-long high self-efficacy beliefs, the developmental conditions surely merit more attention by researchers.

See also: Collective Efficacy and Crime; Conscious Control During Childhood, Development of; Self-Efficacy and Health; Self-Efficacy: Education Aspects.

Bibliography

Baltes, M.M., Silverberg, S.B., 1994. The dynamics between dependency and autonomy. In: Featherman, D.L., Lerner, R.M., Perlmutter, M. (Eds.), Life-span Development and Behavior. Erlbaum, New York, pp. 41–90.

Bandura, A., 1977. Self-efficacy: toward a unifying theory of behavioral change. Psychological Review 84, 191–215.

Bandura, A., 1997. The Exercise of Control. Freeman, New York.

Bandura, A., 2000. Exercise of human agency through collective efficacy. Current Directions in Psychological Science 9, 75–78.

Feltz, D.L., Short, S.E., Sullivan, P.J., 2008. Self-efficacy in Sport. Human Kinetics, Champaign, IL.

Flammer, A., 1990. Erfahrung der eigenen Wirksamkeit [Experiencing One's Own Efficacy]. Huber, Bern, Switzerland.

Flammer, A., 1995. Developmental analysis of control beliefs. In: Bandura, A. (Ed.), Self-efficacy in Changing Societies. Cambridge University Press, New York, pp. 69–113.

Flammer, A., 2009. Entwicklungstheorien [Theories of Development], fourth ed. Huber, Bern, Switzerland.

Heckhausen, J., Schulz, R., 1995. The life-span theory of control. Psychological Review 102, 284–304.

Heider, F., 1944. Social perception and phenomenal causality. Psychological Review 51, 358–374.

Lloyd, J.E.V., Walsh, J., Yailag, M.S., 2005. Sex differences in performance attributions, and achievement in Mathematics. Canadian Journal of Education 28, 384–408.

Maddux, J.E., 2009. The power of believing you can. In: Lopez, S.J., Snyder, C.R. (Eds.), Oxford Handbook of Positive Psychology, second ed. Oxford University Press, New York.

Rothbaum, F., Weisz, J.R., Snyder, S.S., 1982. Changing the world and changing the self: a two-process model of perceived control. Journal of Personality and Social Psychology 42, 5–37.

Rotter, J.B., 1954. Social Learning and Clinical Psychology. Prentice-Hall, Englewood Cliffs, NJ.

Schneewind, K.A., 1995. Impact of family processes on control beliefs. In: Bandura, A. (Ed.), Self-efficacy in Changing Societies. Cambridge University Press, New York, pp. 1–45.

Schunk, D.H., Pajares, F., 2009. Self-efficacy theory. In: Wenzel, K.R., Wigfield, A. (Eds.), Handbook of Motivation at School. Routledge, New York, pp. 35–54.

Seligman, M.E.P., 1975. Helplessness. Freeman, San Francisco.

Skinner, E.A., Chapman, M., Baltes, P.B., 1988. Control, means- ends, and agency beliefs: a new conceptualization and its measurement during childhood. Journal of Personality and Social Psychology 54, 117–133.

Stajkovic, A.D., Lee, D., Nyberg, A.J., 2009. Collective efficacy, group potency, and group performance: meta-analyses of their relationships, and test of a mediation model. Journal of Applied Psychology 94, 814–828.

Zimmerman, B.J., Schunk, D.H., 2009. Self-regulated Learning and Academic Achievement, second ed. Routledge, New York.