Chapter 11
Self-Efficacy: Conditioning the Entrepreneurial Mindset

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11.1 Introduction

Since Bandura's original work (Bandura 1977a), the self-efficacy concept has become an important variable within social psychology research. However, it has also been invoked in numerous other areas of research: organization theory, human resource theory, cognition and behavioral theory, as well as identity theory, in connection with topics such as health, stress, leadership, commitment, ethnicity, religion, gender, culture, social class, because it emphasizes values that we perceive as important in the Western world such as achievement and performance (Gecas 1989).

The literature addressing the self-efficacy concept is thus enormous and continuously growing. Hence, a complete review of the psychology literature on self-efficacy is outside the scope of this chapter. However, the prolific interest in the concept indicates its potential. Nevertheless, although much of the work underpins the importance of predicting and improving performance and enhancing specific behavior in the various fields, much still remains unclear about the antecedents of self-efficacy and the processes that produce and reinforce self-efficacy. Further, research has predominantly been concerned with measuring levels of self-efficacy ex ante and ex post some participation in an experimental setting (see, e.g., Zimmerman et al., 1992 for an exemplar). In other words, research that addresses the underlying determinants of self-efficacy has been much less widespread (Gist and Mitchell 1992).

The aim of this chapter is twofold: First, it seeks to broaden our understanding of the self-efficacy concept. Second, it develops suggestions for new avenues of research into the self-efficacy concept. It sets out to achieve these objectives through an exploration of the origins of the concept, moving on to its impact in the field of entrepreneurship. After a short summary of the chronological development, the chapter will focus on three main issues around entrepreneurial self-efficacy: its measurement, its impact as an influencing factor, and its antecedents, which

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will finally lead to suggestions for understanding the pedagogy needed to promote entrepreneurial self-efficacy in the different social arenas of life.

11.2 The Psychological Origin of Self-Efficacy

Alfred Bandura's social cognitive theory of self-efficacy refers to individual's assessment of their competences and ability to overcome adverse conditions and obstacles and the belief that future actions will be successful (Bandura 1977a, 1986, 1997). According to Bandura (1986), self-efficacy concerns the extent to which an individual believes in his or her capabilities to mobilize the motivation, cognitive resources, and causes of action needed to meet given situational demands. These beliefs influence "what challenges to undertake, how much effort to expend the endeavor (and) how long to persevere in the face of difficulties" (op. cit., p. 29). Thus, an individual's self-efficacy reflects the impact of past experiences on his or her assessment of capacity for performance attainment.

Bandura operates with two types of assessments or expectations: efficacy and outcome expectations (Bandura 1977b). The former refers to a belief about an individual's own competence that she/he can successfully perform a certain action and has been addressed extensively by research over the years, both out- and inside entrepreneurship. The latter refers to an estimate about the social system's responsiveness to that action. This distinction is important because if an individual perceives the social (or political) system as being unresponsive or unappreciative of entrepreneurial action then there is no need for behaving entrepreneurially, even if that individual feels that she/he has the competence and ability to achieve the desired objective. Thus, the environment's positive responsiveness is penultimate to action. Research into this part of the equation is rare, if it exists at all.

However, whether the assessment of both self-efficacy and outcome expectations is positive or negative is predominantly dependent on the preference for or resistance to a particular behavior that each individual has built up (Stern 1985). If something is perceived as a dangerous or risky behavior then an individual is likely to abstain from carrying out this behavior. A preference for or resistance to a particular behavior is built up through somatic markers (Damasio 1994, Bechara and Damasio 2005).

11.2.1 Somatic Markers and Self-Efficacy

The theory of somatic markers is concerned with associating emotions with events (Damasio 1994). Likewise, somatic markers will build up in an individual and the predominance of either the positive or the negative experiences associated with a particular behavior will dominate the individual's choice of reaction. Hence, the first time a person meets a certain feedback she/he will use this to refer back the next time a similar or same feedback is experienced. Thus, if a girl climbs a tree and falls down hurting herself then her mother has two options: either to create a positive

somatic marker for "failing fast" – oh, that hurt but that is what may happen when you climb a tree – get back on the horse and practice. Or she can run to the rescue and say "never ever do that again, it is so dangerous to climb trees." The former creates a positive somatic marker, the latter a negative one for experimenting. If the mother does this every time the little girl tries something that might hurt her or she might fail to do, then she may gradually build a resistance to attempt risky behavior. Basically, the process can be likened to a washbasin with a plug and a dripping tap. On its own a drip is just a drip. But if drips are collected the basin fills up. Further, a drip can be either warm or cold. Whether the water is ultimately warm or cold depends on the predominance of one or the other (not taking into account evaporation and a general cooling of warm water!). And that is what happens: drips of somatic markers are stored in the subconscious, deep within the inner system of our brains. Thus, abstaining from a certain action is not necessarily a conscious act, but rather a subconscious one. Somatic markers become reinforced throughout our lives and our choices in life will reflect our individual "stores" of somatic markers (Damasio 1994).

Damasio is, however, not sufficiently precise in describing how this process takes place and how it becomes internalized. Stern (1985), on the other hand, delivers an explanation in his theory of "representations of interactions generalized" (RIGs). RIG is a developmental psychological term about how people build notions of others. It starts the minute the baby is born and continues all through our lives. The basic premise of this theory is that in order to navigate in the world, all the impressions of events and individual reactions that we meet in our lives are interpreted, internalized, and eventually generalized. Every time we meet something or someone, then this meeting builds on what previous experiences we have had with this something or someone, simply because we cannot continue to build new impressions. It is a way to create a continuous and "normal" picture of others, against which we perceive new impressions of them. The reason we can experience something as "different" is because we have a memory (our RIG) of what it usually is like. These RIGs can produce either positive or negative memories, or as Damasio calls them guiding stars or black holes (Damaiso 1994). Whether they function as one or the other means that individuals, without thinking about it, will avoid negative somatic markers before they even become a possibility. It entails that the emotions and feelings that are connected to certain results and those results that produce positive emotions and feelings in us will be preferred over those that produce negative emotions and feelings. Thus, they may be seen as personality shaping as well as behavior ruling. It also entails that being conscious about your RIGs is an underlying mechanism of potential change.

Thus, unknowingly, the parents of the little girl may be conditioning her mind against undertaking any risky behavior and this may in time translate into a disposition not to become an entrepreneur because this is often portrayed as a risky behavior. This means that in order to break such a pattern, it is necessary to find methods of "unconditioning the mind" – of displacing the cold water with warm and further at a greater speed than that with which it was originally built up. Research consistently shows that women score lower on self-efficacy than men (Hackett and

Betz 1981; Carter et al. 1997; Fletcher 1999; Neergaard and Eythórsdóttir 2008). This indicates that girls are conditioned in a different way and that women make choices based on different experiences to men. This is not to say that it is not possible to overcome RIGs, but it is necessary to find methods of "unconditioning" – of breaking the patterns. Hence, taking a critical case perspective, if ways of enhancing women's self-efficacy can be identified, then we will also have found a way of increasing the level of men's (Neergaard 2007). However, because these patterns of behavior are based on a subconscious conditioning, they *are* very difficult to change. Further, the deeper the RIGs are built in our culture, the more difficult it is to change them. Thus, the Jante Law can best be described as a universal, national RIG, see Box 11.1.

Box 11.1 Janteloven (The Jante Law) (based on Sandemose 1933)

Du skal ikke tro, du er noget∼∼∼(You shall not think that you are special)
Du skal ikke tro, du er lige så klog som os∼∼∼(*You shall not think that you are of the same standing as us*)
Du skal ikke tro, du er klogere end os∼∼∼*(You shall not think that you are smarter than us)*
Du skal ikke indbilde dig, du er bedre end os∼∼∼*(You shall not fancy yourself as being better than us)*
Du skal ikke tro, du ved mere end os∼∼∼(*You shall not think that you know more than us*)
Du skal ikke tro, at du er mere end os∼∼∼(*You shall not think that you are more important than us*)
Du skal ikke tro, at du duer til noget∼∼∼(*You shall not think that you are good at anything*)
Du skal ikke le af os∼∼∼(*You shall not laugh at us*)
Du skal ikke tro, at nogen bryder sig om dig∼∼∼(*You shall not think that anyone cares about you*)
Du skal ikke tro, at du kan lære os noget∼∼∼(*You shall not think that you can teach us anything*)

The impact of the Jante Law on Danish/Scandinavian culture is pervasive and Danes are, in general, very skeptical of success (Smith and Neergaard 2008). The Jante Law also partly explains the power of the social democratic values espousing equality, which are simultaneously an advantage and a problem. They represent an advantage, because they helped create the Nordic welfare model, which redistributes wealth from the rich to the poor, so that the difference between the two groups is reduced. They constitute a problem, because the incentive to better oneself – and therefore be smarter, special, or better in some way – is reduced. Thus, having a self-efficacious feeling may be affected by such universal beliefs.

Since patterns of behavior are built up over long periods of time, they cannot be broken just in one go. It is necessary to create a trustful teaching environment that provides continuous experiences of success. Thus, just one successful experience may not be sufficient to change an internalized experience. Further, it is necessary to identify differentiated challenges that are right for the individual and make sure that each individual has positive experiences – as a single negative experience will just bring home the original aversion against carrying out a certain act. Therefore, teaching needs to include ways of impressing on potential entrepreneurs that it may be the expectation and perception of how difficult it might be that is the worst part. It can be likened to jumping from the 10-m diving board – it is walking out toward the edge that is the worst part.

A high level of self-efficacy is achieved through repeated performance accomplishments and the overcoming of obstacles through effort and perseverance (Wood and Bandura 1989) and produces the belief in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to exercise control over events in one's life (Wood and Bandura 1989). So how can we teach self-efficacy? Bandura's (1997) self-efficacy framework operates with four sources of self-efficacy or ways in which we are subconsciously conditioned toward achievement: mastery experiences, vicarious experience (also known as modeling), social/verbal persuasion, and judgment about physiological and affective state. As will be shown, each of these operates in the individual–environment nexus. Wood and Bandura (1989) further distinguish between possessing skills and the ability to use them well and consistently under difficult or adverse circumstances. The question is then how and in which circumstances an individual learns to cultivate these skills and the ability to use them well. That is, complete mastery of a skill is no guarantee that the skill will be used, especially under stress or in the face of high stakes; no self-efficacy, no behavior. In order to identify how it is possible to support positive representations, replace or transform possible negative ones, to produce self-efficacious behavior, we can use Bandura's framework.

11.2.1.1 Mastery Experiences

Bandura describes how the gradual generation of an ability may result in a mastery experience. The experience has to be sufficiently difficult to achieve and contain a potential danger of failure. If this action succeeds then it will count as a mastery experience. Thus, a task, which is to easy achieve, will not provide a change in perception. In other words, we are concerned with tasks that will bring about a more competitive, risk taking, self-reliant, or ambitious attitude such as participating in competitive sports activities, hence generating self-efficacious attitude.

11.2.1.2 Vicarious Experience/Modeling

According to Bandura (1977b, 1986), vicarious experience means that we learn through imitating or repeating the behavior of others. Bandura suggests that most modeling is based on behavioral observation. It occurs when a certain social

behavior, e.g., entrepreneurship, is informally observed and then adopted by an individual. Hence, the learning occurs by example rather than by direct experience (Bandura 1977b). In other words, role models are individuals on whom you can mirror your own behavior and use as a guide for your own action and are usually persons whom the individual admires and whose opinions are trustworthy. The good role model delivers the first stepping-stone or guide for action so it is perceived as less dangerous to navigate through uncertain and potentially challenging waters. Scherer et al. (1989) found that the presence of a high-performing parent entrepreneur had a positive impact on an individual's choice of an entrepreneurial career. However, role models do not necessarily have to be actual entrepreneurs or parents although they can be, but a role model always has to be relevant and believable for the situation in which the individual finds himself or herself in. Thus, women may mirror themselves in different role models than men.

11.2.1.3 Social/Verbal Persuasion

Bandura describes the influence that our environment has on our beliefs of what is acceptable or non-acceptable behavior through the discourse or peer pressure. For instance, the reason for the low participation of women in entrepreneurship in many countries may be due to the fact that entrepreneurship is often associated with long working hours, and particularly young women of childbearing age may deselect entrepreneurship because the environment does not allow for this double role. This goes hand in hand with ideas about social identity because it typically involves peers – family, other women's acceptance – or other groups who can be defined as culture bearers.

11.2.1.4 Judgment About Physiological State

In order to heighten beliefs in coping efficacy with corresponding improvements in performance it is important to eliminate emotional reactions to subjective threats through mastery experiences (Bandura 1989). He describes the importance of being conscious of physical and emotional reactions in different situations and how you perceive and interpret these reactions because this impinges on your ability. If you are unable to register and interpret your own bodily reactions and emotions when you have reached your limit, then you will ultimately fail in what you are doing and therefore you will have an unsuccessful experience. This is why we see a high extent of very clever and highly motivated entrepreneurs who "burn out." The relation between bodily reactions, emotions, and feelings of success is thus very close. There is some taboo surrounding the verbalization of emotions in teaching environments, which may make it very difficult to change this situation.

Therefore, in order to facilitate entrepreneurial behavior we need to promote certain behavioral patterns. The way to do this may potentially include a facilitating, coaching approach to making individuals think reflexively about their own RIGs or exposing them to exercises that slowly push their limits for certain behavior. For example, in teaching entrepreneurs who may fear rejection from the first customer,

a teacher could ask "Are there situations in which you feel comfortable in contacting new persons?" And "Are there then potential ways in which you extrapolate from this situation to situations where you feel uncomfortable?" Such future-oriented and solution-driven questions do not break the therapeutic space but more subtly facilitate an emotionally safe solution that will condition the mind toward a more positive interpretation of oneself. Figure 11.1 shows the interrelationship between the four sources of self-efficacy and the process of transforming behavioral patterns. The idea is that for each of the sources it is possible to design a curriculum and appropriate teaching methods. This will naturally be different depending on the age and the stage of education, which will be shown in a later section.

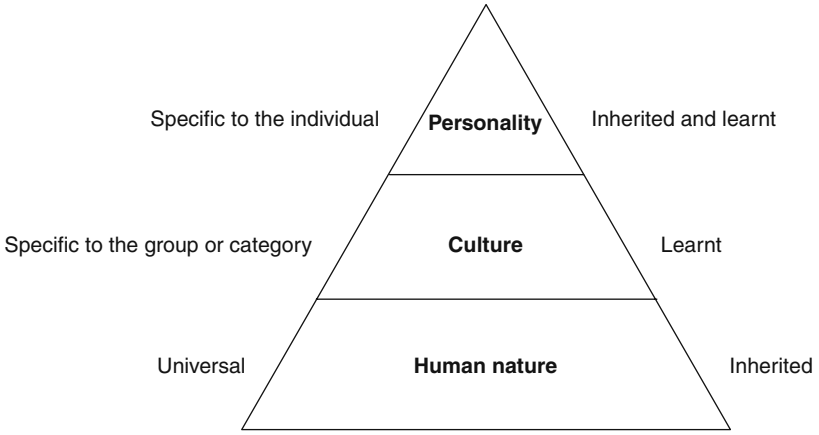

Fig. 11.1 The three levels of mental programming/conditioning (Hofstede 1991: 6)

11.2.2 Measuring Self-Efficacy in Psychology

There are various approaches to measuring self-efficacy. Generally they fall into three different groups (Gecas 1989): task-specific measures (Bandura's own approach), domain-specific measures (e.g., health, political, entrepreneurial), and general measures. What can be learnt from the existing studies in, e.g., the health literature is that self-efficacy is a significant factor in overcoming various disorders, addictions, and phobias. Indeed, recovery from different types of illness seems to be more rapid in individuals with high levels of self-efficacy (Schwalbe and Gecas 1988).

However, according to Gecas (1989) the measurement of self-efficacy in the psychology literature is still rather primitive. Even the general measures have predominantly been concerned with measuring levels of self-efficacy ex ante and ex post some participation in an experimental setting (see, e.g., Zimmerman et al., 1992 for an exemplar). A positive attitude or state of mind seems to work, but how it works is still a mystery (Gecas 1989). In other words, research that addresses the underlying determinants of self-efficacy is lacking in this body of research and this is

important if attempts to improve levels of self-efficacy in individuals are to succeed (Gist and Mitchell 1992). Therefore, we need to identify the triggering factors of the type of behavior we want to improve, e.g., entrepreneurial behavior. However, how entrepreneurship research has addressed the measurement of self-efficacy will be discussed later.

11.3 ESE: Entrepreneurial Self-Efficacy

Two ambitions have driven the transfer of psychological constructs in general and more specifically that of self-efficacy into the entrepreneurship literature. First, there is our general ambition as entrepreneurship scholars to produce more entrepreneurs, as we strongly believe in their positive economic influence, a fulfilling lifestyle, and an attractive life option. Second, the field has failed for a long time to find personality traits in entrepreneurs that could differentiate them from other groups (see, e.g., Gartner 1988). The field has now turned to drill into the entrepreneur's head, searching for distinct entrepreneurial characteristics both specific enough to be descriptive of core entrepreneurial concepts and at the same time broad enough to embrace all varieties of entrepreneurs.

11.3.1 The History of Entrepreneurial Self-Efficacy Research

In order to delineate the growing impact of self-efficacy in entrepreneurship research, we propose to look back to 1989. Bandura (1977a) published his seminal work on self-efficacy in the context of human agency, and Gist (1987) introduced self-efficacy to the management literature with a discussion of implications for organizational behavior and human resource management. Then, Scherer et al. (1989) published a study on the role model performance effects on the development of entrepreneurial career preferences. These are among the pioneers in drawing on concepts from the field of psychology (namely Social Learning Theory), introducing them to the field of entrepreneurship, thereby starting a valuable interdisciplinary discussion. Their results revealed that the existence of a parent role model, cf. Bandura's "modeling" concept, increases a variety of antecedents to the child's entrepreneurial career choice: entrepreneurial career expectancy (what is later labeled as intention, see, e.g., Bird 1988) and entrepreneurial preparedness including – what Scherer et al. (1989) call – education and training aspirations as well as entrepreneurial task self-efficacy (op. cit., p. 66).

For the next decade, entrepreneurship researchers developed the concept of entrepreneurial self-efficacy. It moved slowly from the psychological corner of career choice research – where it had also been overlooked as a viable career option (Boyd and Vozikis 1994, p. 74) – via intentions research into the center of the entrepreneurship field. While studies after 1998 mostly used the term entrepreneurial self-efficacy, there is a rather broad variety of terms used up to this point. Boyd and Vozikis (1994) are exemplary of a noteworthy development

step: building upon the work of Scherer et al. (1989), thus tying their research to the career-related self-efficacy discussion. However, they finally end up labeling their own scale "entrepreneurial self-efficacy" – or ESE. The concept was then popularized in the entrepreneurship discussion by Krueger and Brazeal (1994), who defined it as an attribute of personal competence and control, which helps convert perceived failures into learning experiences. For them, there is no question about the importance of the concept: "No self-efficacy, no behavior" (op. cit., p. 94). Yet, Krueger and Brazeal used the terms "perceived venture feasibility" and "perceived venture self-efficacy" and built a scale by adapting a set of obstacles for corporate ventures from MacMillan et al. (1986).

The term entrepreneurial self-efficacy finally emerged as the combination of self-efficacy as a task-specific psychological concept and entrepreneurship as a bundle of tasks that are supposed to represent the entrepreneurial career choice. The concept gains a foothold when it started to manifest itself in the titles of top tier journal articles. Chen et al. (1998) were among the first to mention entrepreneurial self-efficacy in the title of a research paper, thereby moving the concept into the focus of the field. Their study tied directly in with the dissatisfaction of the field in searching for general entrepreneurial traits, trying to identify distinctively entrepreneurial characteristics. Chen et al. (1998) were able to show that entrepreneurial self-efficacy offered the potential to differentiate entrepreneurs from non-entrepreneurs. Thus, they carried out the task-specific adaptation of self-efficacy to the entrepreneurial domain, opening up a fruitful discussion on the relevant entrepreneurial facets that needed to be included in valid measurement scales for entrepreneurial self-efficacy. They also contributed to the debate in the literature by differentiating the concept from other psychological concepts as locus of control which had shown "only limited success in differentiating entrepreneurs from higher achievers and internalizers in other spheres of life" (op. cit., p. 312) and the importance of the contribution is cemented by the inclusion in Shane and Venkataraman's (2000) seminal article on entrepreneurship as a field of research. Shane and Venkataraman (op. cit., pp. 222–224) mentioned cognitive properties as an important field of study in context with the discovery of opportunities, pointing explicitly to the value of incorporating entrepreneurial self-efficacy in entrepreneurship research.

Since 1998, the number of articles on entrepreneurial self-efficacy has been constantly growing. Roughly until 2004, research mainly focused on either creating scales for entrepreneurial self-efficacy or testing existing scales in varying contexts (Kourilsky and Walstad 1998; DeNoble et al. 1999; Anna and Chandler 2000; Drnovsek and Glas 2002; Lucas and Cooper 2004; Forbes 2005; Hao et al. 2005). Originally stemming from career research, many of these studies examined the impact of entrepreneurial self-efficacy on entrepreneurial intentions. Especially in the context of training programs, entrepreneurial self-efficacy was employed to check the program's effectiveness (e.g., Peterman and Kennedy 2003; Lucas and Cooper 2004). A basic discussion point was the fact that self-efficacy emerged as an important mechanism to overcome perceptions of risk. Hence, the mechanism fitted well into the venturing process (e.g., Boyd and Vozikis 1994; Krueger and Brazeal 1994; Krueger et al. 2000), which also led to studies trying to explain gender

differences in entrepreneurial activity (e.g., Kourilsky and Walstad 1998; Anna and Chandler 2000).

Since 2004, research has begun to take on a more nuanced approach, surrendering assumptions of direct relationships, discussing moderating and mediating effects, and inquiring more intensely about antecedents of entrepreneurial self-efficacy (e.g., Hao et al. 2005; Hmieleski and Baron 2008; Forbes 2005; Wilson et al. 2007; Hmieleski and Corbett 2008). For the years 2007 and 2008 alone, a total of 14 studies building on the existing body of entrepreneurial self-efficacy research were published. This is certainly an indicator of the growing interest in and impact of ESE and signifies the need for further research. Therefore, the next section will address those three issues that may be pertinent to the future development of the discussion on entrepreneurial self-efficacy.

11.3.2 Measurement of ESE

When comparing scales of entrepreneurial self-efficacy, the scales used by Scherer et al. (1989), Chandler and Jansen (1992) as well as Krueger and Brazeal (1994) offer interesting starting points. Building upon a scale by Betz and Hackett (1981), Scherer et al. (1989, p. 59) asked participants whether they believe in their capabilities of performing tasks such as accounting, production, marketing, human resources, and general organizational tasks. Obviously, these tasks belong to the field of management as a whole and are hardly idiosyncratic for the field of entrepreneurship research. The reason for this is that the discussion started in the field of career research where task-specific adaptations of the construct were carried out through definition of typical task sets for the particular career path (see also Lucas and Cooper 2004 for a more recent study within the career choice stream). Therefore, the entrepreneurial career path seems at first sufficiently described by general management functions, at least if compared to scales for entirely different career paths like teachers or parents. In a comparable approach and almost simultaneously, Chandler and Jansen (1992) developed an entrepreneurial competences scale, combining entrepreneurial, managerial, and technical-functional roles in order to cover the full spectrum of entrepreneurial activity. Anna and Chandler (2000) followed up on this scale, inquiring for self-efficacy on competences like opportunity recognition, formal planning, economic management, and human/conceptual competence. Further, Krueger and Brazeal (1994) propose their perceived venture self-efficacy scale with 27 items on obstacles for ventures. This scale has been taken up again in recent studies in the *Journal of Developmental Entrepreneurship* (Sequeira et al. 2007; Mueller and Dato-On 2008).

Although the psychology literature also uses a general self-efficacy scale, entrepreneurship researchers have mostly adopted a task-specific understanding. Studies still using the general self-efficacy scales have been carried out by, e.g., Markman et al. (2002) and Markman and Baron (2003). In 1998, Chen et al. consolidated the existing research and built a scale combining the works of Scherer et al. (1989), Boyd and Vozikis (1994), and Krueger and Brazeal (1994), stressing the

understanding of entrepreneurial self-efficacy as a key prerequisite for entrepreneurs and a key impact factor for entrepreneurial intentions. In order to create their scale, they further drew upon the literature on entrepreneurial roles (Long 1983; Kazanjian 1988; Miner 1990). Chen et al. (1998) argued that enlisting a full list of entrepreneurial activities would be highly impractical and alternatively chose exemplary activities, which they believed characterize this special "career choice" of entrepreneurship. In conclusion, they define entrepreneurial self-efficacy as the belief of an individual to be capable (efficacious) to successfully perform a set of typical entrepreneurial activities. Chen et al. (1998) finally produced a list of 26 items to represent the domain of entrepreneurship. Five factors turned out to underlie the item structure: marketing, innovation, management, risk taking, and financial control. Results showed the scale's capacity to successfully differentiate founders from non-founders. In comparison to Scherer et al. (1989), it even revealed a development from rather managerial functions to a more entrepreneurial conceptualization. However, among the five factors, Chen et al. only found two to be uniquely entrepreneurial, namely innovation and risk taking. They concluded that the three managerial competences are necessary for entrepreneurs in a more general sense but do not differentiate them from other managers.

However, DeNoble et al. (1999) criticized the scales by Chandler and Jansen, as well as Chen et al., for not being sufficiently entrepreneurship specific. DeNoble et al. (1999) proceeded in a similar way to build a different scale. Eight entrepreneurs generated 100 statements, which were condensed to 35 skills and behaviors, which were further reduced by exploratory and confirmatory factor analysis to six dimensions: developing new product or market opportunities, building an innovative environment, initiating investor relationships, defining a core purpose, coping with unexpected challenges, and developing critical human resources. Results showed that this set of skills and behaviors influences entrepreneurial intentions (DeNoble et al. 1999). More recently, this scale has been identified as an alternative to the scale by Chen et al. for its robustness in predicting entrepreneurial performance (Hmieleski and Baron 2008; Hmieleski and Corbett 2008). Despite its questionable fit with the entrepreneurial domain, Chen et al.'s scale has become a cornerstone for entrepreneurial self-efficacy measurement in the literature and has since been used in a variety of studies (e.g., Drnovsek and Glas 2002; Forbes 2005; Hao et al. 2005; Steffens et al. 2006; Urban 2006; Wilson et al. 2007). Hao et al. (2005) and Sardeshmukh and Corbett (2008) further advanced the scale and moved it even closer to the core of entrepreneurial activity: identifying new business opportunities, creating new products, thinking creatively, and commercializing an idea or new development.

11.3.3 Impact of ESE and Moderating Effects

As previously mentioned, the entrepreneurial self-efficacy literature has its infancy in career research. Accordingly, many of the early studies tried to explain differences in career choice. However, Krueger and Brazeal (1994) relate their

measure of perceived venture self-efficacy to models of entrepreneurial intent. As entrepreneurial self-efficacy, the concept became popularized as an antecedent to entrepreneurial activity. Chen et al. (1998) found "a significant and consistent positive effect of entrepreneurial self-efficacy on the likelihood of being an entrepreneur" (op. cit., p. 310). While this relationship has been reproduced by other studies (DeNoble et al. 1999; Krueger et al. 2000), research on the direct impact on performance has produced less congruent results. Anna et al. (1999) and Forbes (2005) both reported a positive impact of entrepreneurial self-efficacy on subjective performance measures. However, Chandler and Jansen (1997) found no such performance impact for entrepreneurial self-efficacy in their attempt to predict causal relationships between entrepreneurial competences (entrepreneurial, managerial, and technical self-efficacies) and emerging venture performance. Managerial efficacy turned out to be a significant predictor of subsequent performance, while the entrepreneurial and technical dimensions did not predict performance. Neither could Chen et al. (1998) provide a link. They offered a set of possible explanations for the unexpected results. First, self-efficacy in general is used to predict performance at the individual level. They believed the relationship with venture performance to be more complex. Second, they noted that self-efficacy has been a good predictor for performance that followed closely in time and not so much for more distant performance effects. Third, "although higher self-efficacy definitely motivates entrepreneurial entry, it may not always positively affect performance" (op. cit., p. 313). This links directly to the results of more recent studies, e.g., Hmieleski and Baron (2008) cite references from the psychology and management literature that have found positive relationship between self-efficacy and growth (e.g., Baum et al. 2001; Baum and Locke 2004). However, it is necessary to note that these studies have used adapted self-efficacy scales in which they do not ask for entrepreneurial functions but for the *ability* to grow a business. The authors conclude their own literature review stating that entrepreneurs high in self-efficacy seem to be "higher performing in that the firms they lead tend to grow more quickly and be more profitable than those led by entrepreneurs who are comparably lower in entrepreneurial self-efficacy" (Hmieleski and Baron 2008, p. 60). However, their own results question a direct impact and show moderating effects on the performance impact of entrepreneurial self-efficacy.

In terms of moderating effects, Chen et al. (1998) include the environment in their theoretical discussion as one part of a triangle of reciprocal causation of (i) cognition, (ii) behavior, and (iii) environment, which all seem to influence the relationship between self-efficacy and performance. In conclusion, they advocate a consideration of the environment, shaping it so that it is supportive to entrepreneurs. They claim that individuals feel to be more self-efficacious when they can assess their own entrepreneurial capacity within a supportive environment (op. cit., p. 314). Other studies have also suggested further moderating effects: Sequeira et al. (2007) found that the structure of the entrepreneur's personal network moderates the relationship between self-efficacy and entrepreneurial intentions as well as action. Hmieleski and Baron (2008) are able to predict entrepreneurial performance but find the relationship to be moderated by dispositional optimism and environmental

dynamism. Hence, entrepreneurial self-efficacy and high levels of optimism can coalesce to inadequate levels of over-confidence with negative effects in a dynamic environment. Therefore, entrepreneurship education programs should be required to teach tools of self-regulation (Hmieleski and Baron 2008). In another recent study, Hmieleski and Corbett (2008) examine the relationship of improvisational behavior on new venture performance and entrepreneurs' job satisfaction. In this study, they find entrepreneurial self-efficacy to moderate the relationships. While the improvisation–performance relationship is positively moderated, the improvisation–satisfaction relationship is negatively moderated, which opens up further avenues of research on interaction effects (Hmieleski and Corbett 2008).

Finally, some studies have analyzed mediating roles of self-efficacy: Luthans and Ibrayeva (2006) find a direct and mediating effect of self-efficacy on performance in the context of transition economies. Hao et al. (2005) were among the first to look back into the chain of causalities to the antecedents of entrepreneurial self-efficacy, discussing the mediating role of self-efficacy on intentions. The latter shows that entrepreneurial self-efficacy mediates the impact of perceptions of formal learning, entrepreneurial experience, and risk propensity on entrepreneurial intentions.

11.3.4 Antecedents of ESE

A discussion on antecedents to entrepreneurial self-efficacy brings us back to the field of psychology with its emphasis on mastery experience, modeling/vicarious experience, social persuasion, and physiological factors as antecedents to entrepreneurial self-efficacy. By now, a variety of studies have started to look more intensely into these antecedent concepts to entrepreneurial self-efficacy (Scherer et al. 1989; Forbes 2005; Hao et al. 2005; Barbosa et al. 2007; Carr and Sequeira 2007; Wilson et al. 2007; Mueller and Dato-On 2008; Sardeshmukh and Corbett 2008). Scherer et al. (1989) emphasized the necessity of a *parent role model* and its impact on entrepreneurial self-efficacy. They saw a need to develop theory in terms of the underlying mechanisms, in their case how an entrepreneurial role model influences career preferences (op. cit., p. 67). Hao et al. (2005) found that *training programs, previous experience, and risk propensity* – three of the most frequently identified individual-level antecedents of entrepreneurship – drive entrepreneurial self-efficacy and subsequent intentions to become an entrepreneur. They advised to "incorporate as many diverse types of learning experiences related to the promotion of greater entrepreneurial self-efficacy as is practical" (op. cit., p. 1270). Forbes (2005) discussed the impact of *strategic decision making* on entrepreneurial self-efficacy, showing that the type of decision making in a venture influences self-efficacy beliefs. He also hypothesized that there has not been a lot of antecedent research due to the fact that effect relationships of entrepreneurial self-efficacy are more straightforward (op. cit., p. 616). Carr and Sequeira (2007) discussed the importance of the *family influence* on entrepreneurial self-efficacy. Wilson et al. (2007) found a strong influence of *entrepreneurship education* on entrepreneurial self-efficacy. The results from their gender study with female participants of

different age groups suggest that it is important to provide entrepreneurial training at an early age (Wilson et al. 2007). Krueger and Brazeal (1994, p. 94) summarized the importance of antecedent research as follows: "We learn self-efficacy from actual mastery of the behavior and from believable models of the behavior. It is enhanced by believable information about the behavior and emotional support for performing the behavior (Bandura 1986). These antecedents prove important to promoting the perceived feasibility of new ventures."

Thus, what is not found in the literature is a stringent breakdown of the antecedent discussion in connection with "diagnosis and treatment" of entrepreneurial self-efficacy. Given the current state of research, we propose to focus on two aspects in future research:

1. What can we do in the process of early-age formation to foster entrepreneurial self-efficacy?
2. How is it possible to influence children, adolescents, or young adults with low levels of entrepreneurial self-efficacy to develop the respective cognitive resources?

Chen et al. (1998) provided a variety of suggestions. For example, they proposed entrepreneurship programs to focus not only on entrepreneurial skills but also on entrepreneurial self-efficacy. They put experience first, be it in meeting role models or in working on their own projects or together with other entrepreneurs. They saw treatment in practical training to enhance innovation and risk taking, their two significant dimensions of entrepreneurial self-efficacy. Accordingly, all other antecedents of self-efficacy may be analyzed in terms of applicable tools for entrepreneurship education and training and how this can tie in with the design of a favorable learning environment.

Thus, while research on entrepreneurial self-efficacy has produced valuable knowledge on the measurement of the concept as well as it effects, there seems to be a pertinent need for research on its antecedents and even on the underlying factors or mechanisms that influence the antecedents. Entrepreneurial self-efficacy, the type of subconscious "social persuasion" that arises through individual's interaction with the environment (Bandura 1977b), which embeds itself deep within us without our conscious knowing, needs to be brought out in the open if we are to address it in practice.

11.4 Entrepreneurial Self-Efficacy Contextualized

So far we have seen that self-efficacy is a rather complex psychological concept that dropped into entrepreneurship via career choice research. The question by Krueger and Brazeal, "*What specific factors lead to the perception of self-efficacy for potential entrepreneurs in a community?*" goes right to the crux of the matter (Krueger and Brazeal 1994, p. 99). They continue, "Unanswered is the question of how to encourage entrepreneurship in a discouraged population. Can we use the model to

identify tactics to overcome learned helplessness?" and remind us "Entrepreneurs are made, not born." (Krueger and Brazeal 1994, pp. 101, 102). Few have attempted to answer these questions empirically and the origin and underlying components of self-efficacy still need to be investigated.

Therefore, we may need to center the discussion on which particular mechanisms produce these characteristic attitudes and beliefs and possibly internalized to the extent that they can be perceived and appear as "inherent." Many successful entrepreneurs have little further education and even less entrepreneurship education. Instead, they have a kind of drive that sets them apart and although many have no leadership training at all, they tend to lead their companies with vision and spirit and success. So if entrepreneurial behavior is not taught, from whence does it arise? Although traits may not be inherent at first, they may become internalized as a result of a socializing or educational experience and in time become what we perceive as "inherent" personality traits. According to social psychologists, such acquisition takes place through various forms of experiential learning at some point in life and often in what is popularly called the formative years. Indeed, according to Carland et al. (1988) based on Myers and Myers (1980), personality is something that is largely set during the formative years, that is, attitudes and beliefs are learned. The crucial question is where in the social arenas of their lives do entrepreneurs learn the building blocks of entrepreneurial thinking? One way of exploring this question is by looking to anthropology. Hofstede (1991) suggested that human nature is universal and inherited and cannot be changed. However, what is generally referred to as culture and personality can be programmed or conditioned into the minds of individuals, cf. Fig. 11.1.

Most entrepreneurship scholars agree that the notion of a fixed "entrepreneurial personality" is unlikely at best, but equally that entrepreneurs do think differently (Shaver and Scott 1991). At the same time, both scholars and practitioners appear to assume that much of these differences must arise from various processes of socialization that might explain, even predict, the base rate characteristics of aspiring entrepreneurs (Starr and Fondas 1992). Indeed, Mitchell et al. (2002) demonstrated that cultural differences explain some of the variance in venture-creation decisions among countries. Thus, they seem to agree with Hofstede (1991) who further suggested that cultural programming may take place at different levels in the environment and that a culture consists of both values and practices. National values are more universal – hence, if a nation does not espouse entrepreneurial values generally then this will affect how families bring up their children, see Fig. 11.2. In other words, The Jante Law can be perceived as a national value that inhibits entrepreneurial behavior causing reactions such as the "Tall Poppy Syndrome." Naturally, the family also has an influence on the values transmitted to its children, but if these are very different from the universal ones, then it becomes much more difficult for the child to act in ways that are expected by the social environment. It will thus be much easier for a child brought up in a culture permeated with entrepreneurial values to choose a career as an entrepreneur. Entrepreneurship research has also suggested that growing up in a family business can do much to mold one's entrepreneurial thinking (Krueger 1993). These experiences provide the

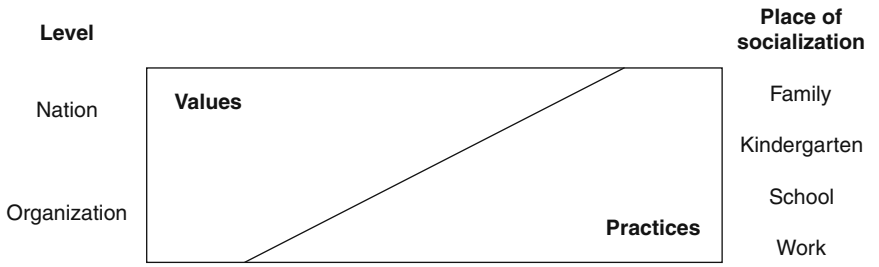

Fig. 11.2 Places of cultural programming (Hofstede 1991: 182)

children with very early understandings of what they can do in life, how they can influence their own lives, what options are open to them, and how the environment is going to react. This section will continue to provide exemplars of how infants, young children, adolescents, and young adults may be conditioned toward a self-efficacious behavior and an entrepreneurial career in the different "social arenas" of their lives.

Bandura (1997) discusses two different ways in which children are conditioned toward self-efficacious behavior, a positive and a negative. The former is produced through support, encouragement, and positive modeling. For example, children who are given challenging or "risky" tasks at an early age, encouraged to undertake these tasks, and praised for the results will experience higher levels of self-efficacy as exemplified earlier in this chapter. The latter results from experience with learning to overcome adverse conditions or experiences. Bandura's (1977a, b; 1986; 1994; 1997) examples are generally concerned with much more adverse conditions such as parental drug abuse, but for the purposes of this chapter, examples that relate to the generation of entrepreneurial behavior will be sought out. Table 11.1 provides an overview of examples of potential influential factors on self-efficacy at the various stages of children's development. Chell (2008) similarly operates with a concept called concept cognitive-affective units. These are among others concerned with expectancies and beliefs that arise from experience of the social world influence of how an individual behaves depending on what she/he believes might happen in a particular situation (op. cit., p. 149). Furthermore, individuals choose desirable courses of action whose potential outcomes will hold particular values for them and avoid the undesirable. Again, these patterns of action and reaction are conditioned into individuals over time as they encounter new challenges to be overcome. Chell (2008) proposes that this generates an "if ... then situation-behavior profile" and that an individual's reaction to a challenge is therefore not random (op. cit., p. 150). Table 11.1 attempts to exemplify what type of mechanisms may influence an individual's "if–then" reaction pattern. Some of the influential mechanisms naturally transcend the whole period from infancy to adulthood. However, the content of the mechanism may change.

Clearly, the family is the most important socialization environment (Gecas 1989). The conditioning of the mind commences already in infancy when parents provide

Table 11.1 Bandura's framework contextualized

	Mastery experience	Vicarious experience/modeling	Social/verbal persuasion (discourse)	Judgements about physiological state
Infancy and early childhood (home, kindergarten and preschool	• Choice of toys and activities	Reference groups: Parents	• Fairy tales • Children's TV • Kindergarten teachers	• Physical exercises and activities
Adolescence (school, high school)	• Participation in sports at a high level	Reference groups: Parents, peers	• Media • Teachers: • Ways of teaching and rewarding appropriate behaviour	• Physical exercises and activities: participating in sports
Young adulthood (university)	• Participation in sports at a high level • Teachers	Reference groups: Family, peers, successful entrepreneurs (real life cases)	• Teachers • Media • Peers • Coaches and mentors	• Participation in sports at a high level • Preparing and attending exams

support, encouragement, and instill expectations in their children so that children come to perceive themselves as competent. Thus, parents who provide a stimulating, challenging, and responsive environment and give their children the freedom to engage in it produce more efficacious children. Children may also learn to develop coping strategies by modeling their parents (Bandura 1997).

11.4.1 Infancy and Early Childhood

Although parents will influence all the stages of development, this is probably the stage at which parents may have the most influence, because they make the most choices on behalf of their children. Thus, even in infancy and early childhood, parents may unwittingly condition their children in ways that do or do not support entrepreneurial behavior at a later age. For example, old-fashioned nursery stories and fairy tales are often inundated with negative messages surrounding the ability to rise above one's station in life. The majority of Hans Christian Anderson's fairy tales present negative outcomes for those individuals who had the audacity to wish for a better future. The most loved fairy tale, and one which signifies the essence of Danish culture, is that of the little mermaid, who gave up her ability to speak to become human. She ends up as froth on the waves in the wake of the Prince's wedding because she could not convince him to love her. The little Matchgirl, a truly entrepreneurial child, selling matchsticks on the streets (that nobody will buy), dies in the cold of winter wishing for a better future. Further, many fairy tales portray the woman (princess) as a person who should just sit back, inactive, and

wait for the young, handsome prince to rescue her. Neither produces associations that provide for much entrepreneurial thought. Entrepreneurial is the Prince who thinks up various ways of coming to her rescue or finding ways to overcome the obstacles on his way. Thus, choosing the right literature is the first step not only in infancy but also later on and books that stress young children's ability to influence their own everyday life may provide them with a different interpretation of their opportunities.

Children's hour on TV may be another example of a major influencing factor. Today, many parents use the TV as a babysitter, rather than involving the children in whatever activities they are undertaking themselves unlike in former times when children learnt how to master various activities from their parents. Further, the learning that the child takes away from watching TV depends on what program is chosen. Crucial to this discussion is thus how the content of TV programs may condition children to perceive themselves and their interaction with the environment. According to Danesi (2002), TV influences the way individuals derive meaning for their daily life routines. Open, friendly, and welcoming programs that stress friendship and sharing such as is portrayed by Teletubbies (UK), Teddy and Chicken (DK) or aggressive and hostile, survival of the fittest/smartest as portrayed by many of the cartoons on, e.g., Cartoon Network, will eventually if watched sufficiently frequently have a certain impact, positive or negative.

Parents may further inadvertently influence their children's level of entrepreneurial self-efficacy through their choice of toys. Indeed, construction toys provide children of both sexes opportunities for the development of an inquisitive mind. Toys may also function as role models – e.g., recently Peter Pan's Tinkle Bell doll and its associated products have provided girls with a new type of role model, who is opinionated, resourceful, and skilled.

Female role models dominate kindergartens and primary schools in most of the Western world and mostly the environments surrounding these locations are devoid of potentially dangerous element such as tall trees for building tree houses and climbing. Thus, activities are likely to be influenced by the dominant gender and include fewer choices that may involve risky behavior. Children are rarely allowed to make their own toys or reinterpret natural elements as something else, simply because the opportunity to do so is removed. Most playgrounds are fitted with pre-molded fixtures, which represent no danger to children. Therefore, the thrill of doing something that might be a little bit risky has to be found elsewhere.

Today, parental fear of potential harm coming to their children, which is often exacerbated by the media, also hampers children's freedom to experience and experiment with life as well as their urge and ability to decide for themselves. Children are driven to and picked up from school. Given the freedom to walk or bike, they learn to take care of themselves and make their own decisions, which is a good basis for future self-reliance. Over-controlling parents may easily have an effect on their children that counteracts entrepreneurial behavior.

11.4.2 Adolescence

For adolescents values and standards of conduct that are consistent with those of the home have usually been adopted – and the choice of friends tends to reflect a similar value system and behavioral norm and these peers are more likely to uphold their behavioral standards rather than to breed family conflicts (Bandura 1997, p. 177), but even adolescents who have been subjected to fractured families, poverty, or abuse (substance and physical) can result in one of two outcomes. These children may become as delinquent as their environment or they can learn to navigate successfully in these troubled waters and overcome the problems resulting in a high level of self-efficacy, and breaking the mold of social heritage. Thus, adolescents may be able to expand and strengthen their sense of efficacy by learning how to deal successfully with potentially troublesome situations in which they are unpracticed. Success in managing problem situations instills a strong belief in one's capabilities that provides staying power in the face of other, unrelated difficulties – e.g., a child who is mobbed in school, called names, or excluded from peer group activities may develop coping strategies that are centered on being "better" than those who undertake the mobbing or exclusion and not needing anyone else to succeed.

The approach to teaching seems to have an impact right from primary grade. Teachers who use a responsive classroom approach and provide rich classroom experiences have a greater chance of successfully influencing self-efficacy (Rimm-Kaufman and Sawyer 2004). Thus, the American model of awarding good and desirable behavior by handing out gold stars or other types of rewards assist youngsters in building self-efficacy. It is a subtle way of social persuasion to achieve the behavior wanted.

After-school activities such as participating in competitive sports may also help build self-efficacious behavior. Potentially, there are a number of such activities that may cultivate self-efficacy in one way or another by supporting the ability to overcome constraints, learn the ropes of the game, and endure and cope with difficulties. For example, competitive sports cultivate the aptitude to constantly better yourself, to endure hardship, and make judgments about how much pressure you can cope with. It helps improve perceptions and interpretations of environmental uncertainty and provide coping strategies in the entrepreneurial competitive arena, which is a crucial element in self-efficacy (Neergaard and Krueger 2005). Hence, children who participate in competitive sports are socialized into an entrepreneurial mindset – they feel more competitively competent. They may feel spurred on by apparent obstacles rather than feel discouraged by them. Neergaard and Krueger (2005) found that entrepreneurs who were athletic high-achievers in adolescence and as young adults used their knowledge from their previous sports activities such as focus and persistence to develop appropriate business practices.

11.4.3 Young Adulthood

The media influences the self-schemata of efficacy dependent on physical appearance (strength or beauty) and produces sensitivity to social evaluation (Bandura op.

cit., p. 178). Young adults watching programs such as "Top Model" will evaluate themselves against the apparent criteria set up by the program: skinny and beautiful. Hence, it is likely that documentary programs, which showcase entrepreneurs, will have a potential to "teach appropriate lessons" about entrepreneurship (Neergaard and Smith 2004) because young adults utilize media representations to evaluate their own lives and emulate various components of its content, such as lifestyle (Danesi 2002). Thus, if young adults see that society values individuals who are able to start a company and make a solid profit which gives access to a certain lifestyle, then they may attempt to copy that behavior. Thus, competitive programs such as "The Apprentice" may have similar impact on young would-be entrepreneurs as "Top Model" has on young girls. They want to be the chosen one, the one who has what it takes, and in order to obtain that they have to decode what underlying mechanisms may produce the "right" behavior. A study undertaken by Thompson and Dass (2000) suggests that experiential learning through simulations rather than lectures and cases increases student self-efficacy and strategic planning/thinking ability. The Apprentice is a real-life experiment: a simulation and may thus be copied successfully in class, if teachers understand how to avoid giving the students negative experiences rather than positive ones. Thus, it would be undermining the objective to provide derogatory comments, such as those typically given by the judging panels of the above-mentioned programs.

Another method that might be useful for teaching young entrepreneurship is coaching, as Malone (2001) found that coaching enhances self-efficacy. Such a measure may be used in classes where students are supposed to start their own company. They can be assigned a teacher who acts as a coach cum supervisor with whom to discuss their progress and the challenges they meet. This method assists them in finding their own solutions and thus finding ways to overcoming problems that they can use the next time they encounter a similar type of problem. In other words, they learn to master the skill of entrepreneuring.

This account of potential sources or mechanisms of self-efficacy is by no means claimed to be exhaustive. Some of the mechanisms highlighted above are general in nature, others specific. General mechanisms are those that take place in another context than entrepreneurship, but the learning gained can be extrapolated to an entrepreneurial setting, such as athletic experiences. These may not necessarily produce specific behavior in specific situations, but in conjunction with more specific mechanisms may be sufficient to tip the scales. Specific mechanisms are those particularly entrepreneurial, such as having parents or family who are entrepreneurs. It is probably easier to identify and measure the impact of specific mechanisms than that of the general mechanisms. Further, some of mechanisms transcend the various spheres of life: parents who are entrepreneurs do not stop influencing a child as it grows up; however, the child's interpretation of an entrepreneurial life may develop and change depending on how its mind is conditioned along the way. Figure 11.3 further provides an overview of some of the behavioral patterns that may be possible to reproduce in the classroom in order to (re)condition the student mind toward entrepreneurial action.

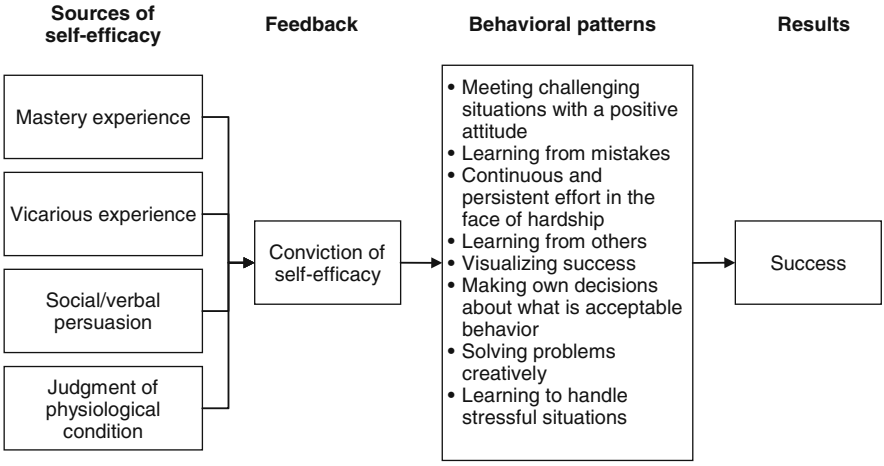

Fig. 11.3 A general model for successful training of self-efficacy (based on Bandura 1997)

11.5 Future Perspectives and Concluding Remarks

Psychologists such as Bandura have long argued that there is an interaction between contextual factors and self-efficacy. Self-efficacy can thus only be produced if the contextual constraints allow this expression. Nevertheless, there has been a void in research and theory development on the relevant context conditions in entrepreneurship research. This chapter has hopefully helped kick off this discussion. Clearly, what is presented constitute only a few ideas. Better theoretical conceptualizations of the contextual/environmental variables that interact to produce self-efficacy are needed. Further, such research might help us establish why differences in entrepreneurial start-ups exist across nations. If underlying national cultural conditions have an impact, a change process may take a long time before it has an impact. In the matter of Denmark with its egalitarian ethos, which permeated school policies in the 1970s and 1980s, it might be difficult to replace traditional teaching methods with teaching methods that acknowledge that children are different, have different skills and interests, and should be taught accordingly.

Additionally, it might be helpful to gather evidence about successful entrepreneurship teaching methods in order to explore if and how these can be related to Bandura's self-efficacy framework, and which methods are most successful in reconditioning children and youngsters toward a more entrepreneurial mindset. Studies can be undertaken in two ways: either retrospective or longitudinal studies. Retrospective studies can trace the exposure of existing entrepreneurs to each of the four factors in Bandura's framework, as attempted by Neergaard and Krueger (2005) who explored the entrepreneurial skills generated through participation in competitive sports activities. Longitudinal studies could experiment with groups of young children and follow their development over time. Such an experiment is currently being undertaken by Danfoss Universe Research Lab in Denmark.

Finally, it should probably be noted that it is not possible to instill immediate changes in individuals. Even if students become aware of their RIGs, it will take continuous, positive conditioning to alter old emotions and patterns of behavior. A conditioning or reconditioning of the mind takes time so if we want future generations to be more entrepreneurial, now may be is the time to start figuring out how to influence their paths.

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