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Peak and Limit Experiences in Outdoor Environments: Opportunities of Nature's Classroom for Health Promotion

Abstract: Both in everyday life and in the context of intervention, outdoor activities can enhance people's wellbeing as well as provide experiences that individuals struggle with, often referred to as "peak experiences" or "limit experiences". Such kinds of experiences change human beings. But what actually are peak and limit experiences? How do they change people? Despite the relevance of the issue, only few conceptually and response theory oriented studies exist to date. To meet this requirement, an analysis was carried out. The results allow far-ranging conclusions for learning and development processes in all age groups in various circumstances. Theoretically and practically relevant consequences emerge for intervention in education, training and therapy, in educational science, social pedagogy, social work, sport science and psychology.

Background

Imagine being in a mountainous, forested national park and having the opportunity to abseil down a steep rock face. As you approach the abseil point at the edge of the cliff, you notice that something is wrong; your heart is pounding, your breathing quickens, your step is unsteady, you feel uneasy, thoughts of ways to avoid the danger spring into your mind..... change of scene: Imagine being on a hike, following a picturesque walking track. As you let your eyes wander across the plain that opens up in front of you, you are suddenly reverently overwhelmed by the pristine landscape's beauty..... – We know from both outdoor education as well as leisure time activities

in outdoor environments such as national or urban parks: certain nature-related experiences do have a crucial, sustainable impact on human beings' state of mind and wellbeing (Fengler & Schwarzer 2007; 2008a; 2008b). Yet hardly anything is known with regard to what these experiences (limit experiences and peak experiences) are about, which specific opportunities this aspect of "nature's classroom" holds and how the change processes in people initiated by these kinds of experiences can be understood. To meet this requirement, a hermeneutical study was carried out.

Research Questions

- Research Question 1: What are peak and limit experiences?
- Research Question 2: Which processes take place during changes due to peak and limit experiences?

Results

Results Research Question 1: What are Peak and Limit Experiences?

"Peak experiences" and "limit experiences" (see Maslow 1968; Maslow 1970; Jaspers 1925) encompass a wide spectrum of experience types associated with positive, negative or not clearly classifiable emotions (e.g. peak sporting performance, vertigo, sense of wonder, meditation) for which the Germans only have one term ("Grenzerfahrung"). Both terms seem to cover the not clearly classifiable experiences, whereas peak experiences seem to relate more to positive appraisals (experiencing one's own peak) and limit experiences seem to relate more to negative appraisals (experiencing one's own limitations). What do these experiences have in common? A

great intensity of experience and the perception of one's own limits and resources in particular appear to play a role. Both these aspects will be addressed in the following.

- In contrast to everyday experiences, individuals experience a *significant disturbance of their personal homeostasis* during peak experiences and limit experiences (abbreviated: p/l experiences), i.e. a disturbance of the individual's ability to regulate or balance its personal internal stability in response to stimuli from the inner or outer environment: One feels 'out of it', 'thrown off track', 'thrown off balance'.
- In undergoing the meaningful experience, the individual becomes aware of his/her own limitations as well as resources ("I always thought I was a sturdy, sporty person – how come my knees start to tremble at the sight of this steep cliff face?"). Thus, p/l experiences are *feedback processes*.
- In contrast to the feedback which influences the formation of sense of self within the course of *interpersonal* communication (see Luft & Ingham 1955), p/l experiences can be seen as *intrapersonal feedback processes*. Correspondingly, these are processes where the 'sender' and the 'receiver' are combined in one individual as in self-awareness and self-perception theories (Bem 1967): The process of learning something about the own self takes place as a consequence of internal signals: physiologically and/or psychologically, emotionally and/or cognitively and/or behaviourally.
- Speaking in cybernetic terminology (see Wiener 1948), p/l experiences can be understood as *positive intrapersonal feedback processes* (they create instability, which means that the calibration of a new homeostasis is necessary and takes place), whereas everyday experiences can be understood as negative intrapersonal

feedback processes (they create stability, which means that the homeostasis remains mainly undisturbed).

P/I experiences are bound to be subjective. However, two generalisable parameters, that can in some cases but needn't necessarily be confounded can be distinguished: "anticipated coping level" and "perceived degree of discrepancy".

We will start with the first parameter, *the anticipated coping level*. P/I experiences initiate a stress process. The application of the cognitive-transactional stress model (see Lazarus & Launier 1978; Lazarus & Folkman 1984; Lazarus 1991) results in constellations which help us to understand p/l experiences. In this stress model, a transaction between situation and person is seen as central to the experience of stress. Specifically, there is a dual appraisal or assessment which the individual carries out in a potentially stressful situation: an appraisal of the situation on the one hand and anticipatorily, an assessment of the resources available to cope with the situation on the other hand. In this context, a differentiation is made between situations that are perceived as threatening and those that are perceived as challenging. The range of experiences that are characterised as p/l experiences shows that situations assessed both as threatening or challenging (sensu Lazarus et al) can be classified as p/l experiences (e.g. more or less severe level of vertigo, accompanied by a high or low prospect of coping under one's own power). The assessment of the personal and social coping resources (sensu Lazarus) appears to play an important role in p/l experiences.

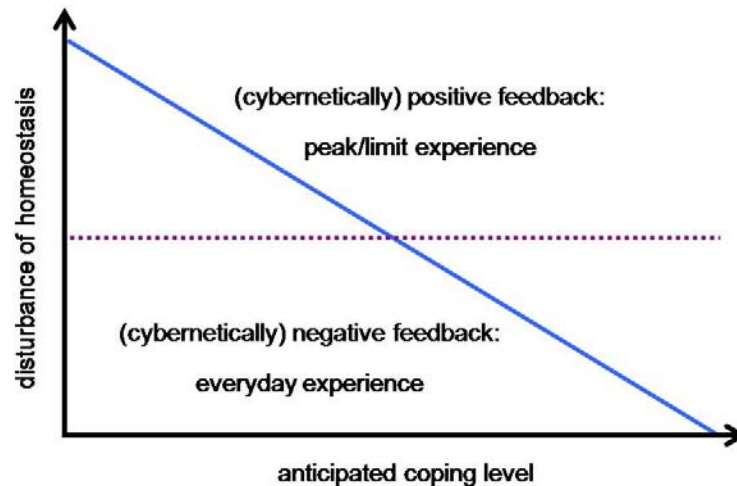


Figure 1: Disturbance of homeostasis as a function of anticipated coping level (see Fengler 2005; Fengler 2006)

Figure 1 illustrates the assumed relation between a disturbance of homeostasis and the anticipated coping level. The starting assumption was that a p/l experience can only be spoken of for serious homeostasis disturbances. The results of our analysis so far lead to the following conclusions: *The likelihood of a serious disturbance of homeostasis and thus of undergoing a p/l experience is greater the lower the individual's anticipated coping level is.* An empirical study would be based on the hypothesis of a negative correlation between the anticipated coping level and a disturbance of homeostasis. Situations which are subjectively perceived as challenging (sensu Lazarus et al) are likely to be classified by the individual with a medium anticipated coping level. In some cases, a distinct disturbance of homeostasis can be experienced in such situations – meaning the situation would be perceived as a p/l experience. In situations which the individual perceives to be frightening and threatening (sensu Lazarus et al) on the other hand, it can be assumed that the individual will anticipate his/her coping level to be low. In this case, a serious disturbance of homeostasis and thus the assessment of the situation as a p/l experience can be expected.

Let us now address the second parameter, the *perceived degree of discrepancy*. A whole range of incidents which are commonly referred to using the term ‘p/l experience’ can be easily and clearly understood with the help of the criterion ‘anticipated coping level’. However, not all conceivable p/l experiences are of a threatening or challenging nature: Thus for example, Maslow’s peak experience concept (Maslow 1968; Maslow 1970), peak sporting performances, sense of wonder or the experience of most intense happiness appear to be independent of this. The common factor between these and other conceivable examples can be determined as: The perception of a discrepancy creates the intensity of the experience. In Bateson’s terms (see Bateson 1972) the subjectively perceived significant difference here is the kind of “difference that makes the difference”: One finds oneself in a situation suddenly which is completely different from the previous, familiar or expected situation. This brings to mind the concept of critical life events (see Dohrenwend & Dohrenwend 1974; Inglehart 1991).

There are thus 3 conditional factors which can lead to the perception of a discrepancy:

- If the current situation is experienced as being different from that which occurred directly previously.
- If the current situation is experienced as being different from that which is known and familiar to the individual.
- If the current situation is experienced as being different from what was expected.

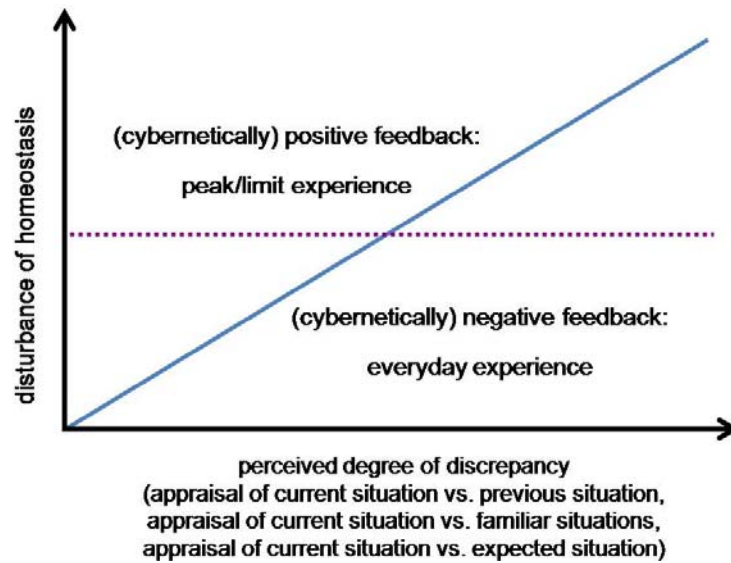


Figure 2: Disturbance of homeostasis as a function of perceived degree of discrepancy (see Fengler 2005; Fengler 2006)

Figure 2 illustrates the assumed relation between a disturbance of homeostasis and the perceived degree of discrepancy. Again, starting from the hypothesis that a p/l experience can only be referred to with regard to a serious disturbance of homeostasis, it can be assumed: *The likelihood of a serious disturbance of homeostasis and thus undergoing a p/l experience will be greater, the stronger the perceived degree of discrepancy between the appraisal of the situation and previous, familiar or expected situations.* An empirical study would be based on the hypothesis of a positive correlation between the degree of discrepancy and a disturbance of homeostasis.

Thus, in summary we can say: *P/l experiences are intrapersonal feedback processes that cause a significant disturbance of the individual's homeostasis. The extent of self-awareness and self-observation as the starting point for changes is greater in p/l experiences than during other experiences. The lower the anticipated coping level*

and/or the higher the perceived degree of discrepancy, the more likely it is that the individual experiences the situation as a p/l experience.

Results Research Question 2: Which Processes Take Place During Changes due to Peak and Limit Experiences?

That p/l experiences can have a lasting effect on people's lives and behaviour can be considered common sense. However, what is changed and how the change takes place appears to be less clear. Yet these questions deserve particular attention; both on the part of interventions in educational science, social pedagogy, social work, sport science and psychology and on the part of those individuals who intentionally undertake or accidentally undergo a p/l experience.

Self concept theory (see Wylie 1970; Harter 1999) differentiates between different sources of self-related information for the formation and modification of self concepts. Like feedback which is categorised as the assignment of attributes by others, p/l experiences can also be assigned to one of these source categories and can be seen as self attribution, a source of self-knowledge of foremost importance (see Rosenberg 1979): The individual forms an opinion on himself through self-observation. Hence, that an individual's sense of self is altered during the course of such experiences can be comprehensibly and conclusively explained based on existing theory.

How can we represent the process of change in self perception through p/l experiences as series of steps? Such a process diagramme has to take both general assumptions on the processes for digesting information relevant to self concepts and contributions from information and motivation theory into account.

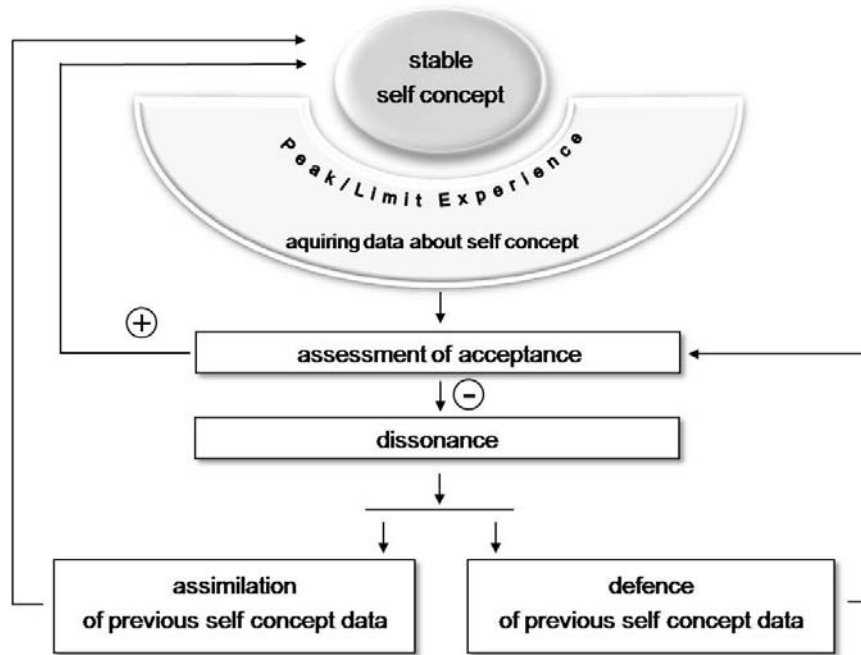


Figure 3: Process diagramme: P/L experiences and the modification of the self concept (see Fengler 2005; Fengler 2006)

Figure 3 shows a flow chart based on theoretical principles illustrating the modification of self concept initiated by peak and limit experiences. The individual processes can be clearly demonstrated using an example: In the context of an outdoor education intervention or in his leisure time, an individual has the opportunity to abseil down a steep rock face. We assume that the individual's *self concept* is *stable* in this initial situation (see figure 3).

However, as the person approaches the abseil point at the edge of the cliff, he notices that something is wrong; his heart is pounding, his breathing quickens, his step is

unsteady, he feels uneasy, thoughts of ways to avoid the danger spring into his mind (behavioural level, affective level and cognitive level). The individual will – in most cases subconsciously – classify these signals: everyday experience or p/l experience? We are interested in the p/l experience for the moment which is why we assume a high intensity of experience and a serious disturbance of homeostasis. The individual now perceives these signals that tell him something about how he “functions” as an individual, i.e. about his nature and his self (*acquiring data about self concept*, see fig 3) – thus creating the necessity to ‘align’ the newly acquired data with what he previously knew about himself and was familiar to him.

At this point, an *assessment of acceptance* takes place (see figure 3) – on two counts: on a content and motivational level. The *content level* relates to the question: Does the data that the individual received about himself at the moment of the p/l experience conform to the image that the person had of himself before the experience? For the example this means: The person compares the perceived self concept aspect which he interprets as vertigo with previous experiences of heights. The result of this *comparison* (between *CURRENT* and *PREVIOUS*) can either be positive: There is conformity and thus acceptance – or it can be negative: There is no conformity and thus no acceptance. At the same time, an assessment of acceptance on a *motivational level* also takes place: As regardless of whether the individual is confronted with a limitation obviously shown in this situation – vertigo – for the first time or again (content level), he can judge it to be acceptable or unacceptable. The motivational level relates to the question: Can the data which the individual received at the moment of the p/l experience be accepted when compared with the image that the person has of his own ideal self? Our participant will thus consider to what extent he ‘can live

with' having vertigo or to what extent he rejects this self concept aspect. The result of the *comparison* here (between *CURRENT* and *TARGET* – sensu Rogers, 1961: conflict between actual self and desired self) can also be positive: The recognised behaviour and the associated characteristics are accepted in this case. If the result of the assessment of acceptance is negative, this means: The recognised (inner and outer) behaviour and the associated characteristics are not accepted.

Only if the subjective overall balance of the acquired self concept related data is positive both on a content and motivational level, can a stabilisation of the previous self concept be assumed (see table 1: *stabilisation*; see figure 3: “plus”). If the assessment of acceptance is negative for one or even both of the two perspectives (contentwise and motivational), a dissonance is experienced: the status quo is perceived to be ‘disturbed’, the experience preys on the individual’s mind (see table 1: *dissonance*; see figure 3: “minus”).

Table 1: Elements of overall assessment of acceptance

		contentwise assessment of acceptance CURRENT/PREVIOUS	
		yes	no
motivational assessment of acceptance CURRENT/TARGET	yes	stabilisation	dissonance
	no	dissonance	dissonance

After the assessment of acceptance, there are now basically two approaches: to differentiate and if necessary correct the previous self concept as a result of the newly acquired data (*assimilation of previous self concept data*, see figure 3), or to hold on to the previous self concept despite the newly acquired data (*defence of previous self concept data*, see figure 3). In the first case, where the internal data is assimilated, a change in the self concept occurs and the processing of the acquired data can be

viewed as being completed for the time being resulting again in an altered and stable self concept (see figure 3). In the second case where the internal data is defended, a number of strategies for the reduction of dissonance can be applied, resulting in a recurrent assessment of acceptance.

Is this process diagramme valid for all individuals and for all acquired data to the same extent? Educational science rightly rejects if-then-else concepts for development forecasts. As in other areas, plausible probability statements can help us with analysis and interventions here, however.

The so-called Integrative Self-Schema Model provides suggestions on this (ISSM, Stahlberg, Petersen & Dauenheimer 1999). The model assumes that self-related knowledge has a varying resistance to change depending on how strongly it is imbedded in the individual's cognitive system, thus how elaborated it is. According to the model, depending on how elaborated the addressed aspect is, different motives are activated and varying processes initiated.

For elaborated (so-called schematic, see Markus 1977) – expressed in simple terms: subjectively relevant – self concept aspects, the consistency motive, i.e. a preference for consistent information, is assumed to be dominant. For non-elaborated (so-called aschematic, see Markus 1977) – expressed in simple terms: subjectively less relevant – self concept aspects the motive of self-enhancement, i.e. a preference for positive information, is assumed to be dominant.

In general terms this means: *If a person acquires data about himself in a situation which relates to an aspect of his self image he considers to be important, his principal motive is to maintain his self concept with regard to this aspect, i.e. to achieve consistency.* He is thus more likely to maintain and if necessary to defend his previous image of himself than to assimilate the ‘new’ information – even if in this way an improvement of his self image were possible in this area.

In contrast, if a person acquires data about himself in a situation which relates to an aspect of his self image that he considers to be unimportant, his principal motive is to improve his self image with regard to this aspect, thus to increase his self esteem. He is therefore more likely to try to change his previous self concept as a result of the new information than to hold on to it.

At what point in the self concept modification process do the different motives take effect? First of all during the assessment of acceptance (see figure 3) as the evaluation of the data on a content and motivational level is related to how significant the perceived self concept aspect during the acquisition of data is for the person. The motives then play a role in dealing with dissonance (see figure 3); as whether internal data is assimilated or defended depends on how significant the perceived self concept aspect during the acquisition of data is for the person.

Back to our individual who has a p/l experience at the rock face. *Let us assume initially that he sees having vertigo as fairly irrelevant.* We therefore assume: This aspect of his self concept demonstrates a low resistance to change and the motive of self-enhancement is dominant. What does this mean for the assessment of acceptance

on a content level? If the person already knew he had vertigo, there will be a positive result, if the vertigo was not known previously, the result of the assessment of acceptance will be negative. On a motivational level, the following variants are conceivable: It is likely that having vertigo is acceptable for the individual as our initial assumption is that it is fairly irrelevant to him whether he has vertigo or not. The result of the assessment of acceptance is thus positive in this case. A lack of motivational acceptance is less likely for this example. If the result of the assessment of acceptance is positive overall, we can expect a stabilisation of the previous self concept (see figure 3). Stabilisation though encompasses a large number of processes which on closer examination must be recognised as differential changes as the development of particular characteristics can be shown to be specific to the situation and thus a differentiation can always be carried out. For example our individual can feel that he still has vertigo or that he still has vertigo but to a much lesser extent than he used to. If the result of the assessment of acceptance is negative overall (i.e. on at least one of the motivational and content levels, see table 1), a dissonance is experienced (see figure 3). This dissonance will probably be resolved due to this self concept aspect's low level of resistance to change by *assimilating the internal data* through the application of strategies to reduce dissonance, taking the motive of enhancement into account: e.g. if the participant's knowledge that he does not have vertigo can be replaced by the new knowledge that he actually does have vertigo but is able to confidently deal with his own abilities and limitations, he can achieve a personal victory through this new self-awareness (see figure 3).

What happens if vertigo is particularly relevant for the person? Let us assume that it is extremely important for the individual to be and also to be perceived as fearless,

resolute and willing to take risks in all areas of life. This self concept aspect will thus have a high resistance to change and the consistency motive will be dominant. Two results are conceivable for the assessment of acceptance on a content level: The person can have known about his vertigo previously or not. If he was aware of his vertigo before, the result of the assessment is positive. If the person did not know that he had vertigo, the result of the assessment of acceptance on a content level will be negative. On a motivational level, it can be assumed that the fact that the participant has vertigo is highly unacceptable for him as this clearly contradicts his ideal self concept (see above), the result of the assessment of acceptance will thus also be negative in this case. The alternative of a motivational acceptance appears less likely for the described reasons. If the result of the assessment of acceptance is negative overall (i.e. on at least one of the motivational and content levels), a dissonance is experienced (see figure 3). How will the participant, for whom it is so important not to be afraid, deal with having to confront his own limits with regard to fearlessness at great heights during the p/l experience? We assume the consistency motive to be dominant due to the subjective relevance of the self concept aspect. That means that the participant will try to *defend the previous self concept data* (see figure 3). Many approaches are appropriate as strategies for reducing dissonance (Festinger 1957 provides groundbreaking assumptions and empirical documents). The following strategies can be used as examples to demonstrate our case: Our participant interprets the observed signals as signs of physical exertion; he reminds himself of similar situations in which he didn't experience the vertigo he is currently feeling; he relativises his own powers of judgement and converts the vertigo 'diagnosis' into a feeling of 'normal excitement'. Another assessment of acceptance then follows

resulting in the stabilisation of the self concept or dissonance and its consequences will again be experienced (see figure 3).

The defence of internal data (see figure 3), the efforts to reduce dissonance will continue until the participant feels his state of mind is consonant again. It is conceivable that using the above mentioned or other strategies, the participant succeeds in persuading himself to legitimately maintain his old self concept that he does not have vertigo. The defence of self concept data would thus initially be successful. If the accomplished reduction of dissonance withstands a further assessment of acceptance it can be assumed that the self concept will be stabilised and the issue is thus 'settled' for the participant (see figure 3).

It is a different case if the individual with vertigo does not succeed or only succeeds in the short term (until the next assessment of acceptance) in his defence of self concept data i.e. the defence of his previous self concept through reduction of dissonance; the contrast between the previous, treasured self concept and the current, rejected self concept continues to unsettle him; the thought of "failure" 'haunts' him. In this case an assimilation of self concept data (see figure 3), individually and in relation to the specific situation can be assumed at varying degrees of differentiation. This way, the individual also resolves the dissonance and the issue is initially settled; however in this case the achieved stabilisation of the self concept is differentiated to a certain extent.

We can thus maintain: *Information which individuals receive about themselves during p/l experiences can contribute to self and to self concept development. The way the*

data relevant to the self concept is taken into consideration by the individual, is strongly influenced by the relevance the respective self concept aspect has for the individual. Depending on its relevance, we can assume a differential degree of resistance towards change as well as a dominance of either the motive of consistency or the motive of self-enhancement.

Conclusions

The results allow far-ranging conclusions as well as theoretically and practically relevant consequences for learning and development processes for intervention in the context of education, training and therapy, in educational science, social pedagogy, social work, sport science and psychology.

Generally it should be emphasised that *changes in people's self concept which can occur during p/l experiences are not only determined by the result of the p/l experience*. In addition to the outer, objectively ascertainable coping level (e.g. a person abseils down vs. a person fails to abseil down), the preceding, inner coping processes as described above can already contribute in an indicatory manner to a self concept modification. The outcome of the situation then represents an additional source of information relevant to the self concept for the individual. Within the frame of outdoor education inventions – particularly then when the primary learning objective is not personality development but behaviour modification – as well as in leisure time activities in outdoor environments, changes in self concept must be taken into consideration on many levels throughout the whole process of actions.

To understand the *subjective disturbance of homeostasis* as the key criterion for an extraordinary quality of experience, it is crucial for trainers to be aware of the *variety of situations* which can provide p/l experiences for people. Not only those actions which are traditionally categorised as subjectively entailing risk like for example abseiling should be considered here; principally all activities can represent p/l experiences for individual people.

The described processes can take place consciously or subconsciously depending on the person and the situation. For intervention, i.e. in experiential or environmental courses, it is crucial that they are basically accessible to our consciousness. For practical work it appears to make sense to *direct our efforts towards development issues which are considered to be relevant by the participants*, thus to refer to their subjectively relevant (schematic) self concept areas. Let us recapitulate: In areas of their self concept which are important to them, people tend to maintain their self concept – and to block both in a positive and negative sense any differentiation or change. A positive aspect of this mechanism can be that it can include a protective function if necessary. When information that threatens our self esteem are fought against, they do not penetrate our innermost being and the need for differentiation in a negative sense is not created. The rigid denial of personal weaknesses or an unreasonable adherence to the self assessment of personal strengths (data acquisition implies negative information) can be problematic though. In extreme cases a lack of a willingness to develop, a current lack of the ability to develop and ultimately psychological numbness must be spoken of. In addition, a self concept differentiation in a positive sense (data acquisition implies positive information) is only possible to a limited extent which hinders desirable development opportunities.

We can state as a learning objective: *To create a consciousness of the processes and motives involved in self concept modification among participants in terms of differentiated self awareness and to stimulate both self-critical and self-appreciative self-reflection.* In this context, self-critical and self-appreciative mean: ‘unadulterated’ self-observation – both with regard to areas that are in need of development and in terms of a self-confident acceptance of areas of competence.

Methodically, the detailed awareness on the part of the trainer of the processes involved is a prerequisite for the reflection with the participants that is indispensable for the mutual achievement of this learning objective.

Thematic starting points for practical work – of a verbal and if applicable non-verbal kind – for observation and guided reflection in individual or group intervention contexts could be for example:

- Signals from participants that point to the existence of a *p/l experience* (e.g. “I felt totally out of it.”)
- Signals from participants that point to a *change in the self concept* (e.g. “I always thought I wouldn’t be able to do something like that.”)
- Signals with regard to the *relevance of the self concept area* (e.g. “I was always the best at sport, always.”)
- Signals for the existence of the *consistency motive* (e.g. “That was only luck that I managed that, I’m actually really unsporty!”)
- Signals for *dealing with dissonance* (assimilation of previous self concept data / defence of previous self concept data) (e.g. “I’m not scared, I’m only messing about!”)

Picking up on inner psychological processes like these in seminar participants, clients and others who have such experiences and are interested in receiving support, requires a resource-oriented approach: Both in the sense of a self-appreciatory acceptance of skills and with regard to existing but previously overlooked skills and in relation to promising potential. This corresponds to the basic humanistic idea that each individual's potential lies within himself, that each individual has an inner urge towards a more fulfilled existence, towards an ever more perfect realisation of his own humanity – and that the role of the environment is to help him to realise his own and not its potential (Maslow, 1973).

With an increased awareness of the processes that can take place within the course of peak and limit experiences and with cautious professional intervention stimuli, we can responsibly accompany and support individuals in outdoor environments and make optimal use of their inherent potential for the promotion of health, holistic well being and quality of life.

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