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2 Phenomenology of Positive Change: Personal Growth

Abstract: How do we lastingly change our lives for the better? This chapter presents a possible answer to this question by focusing on the concept of personal change. As underlined by recent research in psychology and neuroscience, personal change is a complex process depending on the person, the issues, and the situation. However, by merging the ideas of two influential transdiagnostic models of change – the Perceptual Control Theory and the TransTheoretical Model of Behavior Change – it is possible to describe a process of personal change that moves from an expressed desire for change to a recovery from inevitable relapses. Even if these characteristics of personal change are now shared by many of the leading approaches to psychotherapy, many of us experience psychological change without the help of any form of treatment. But how does this happen and why?

In this chapter we suggest that our cognitive system is naturally shaped to identify and counter the experiential conflicts that are usually the main motives for change. This is achieved through a specific cognitive process – presence – whose goal is the control of the activity of the individual: I am present in a real or virtual space if I manage to put my intentions into action (enacting them). Specifically presence *provides the self with a feedback about the status of its activity*: the self perceives the variations in the feeling of presence (*breakdowns* and *optimal experience*) and tunes its activity accordingly. The role of breakdowns in personal change is clear: to push individuals towards it. By perceiving a conflict (awareness) between different goals the subject is pushed to resolve the conflict between them.

Optimal experiences, also defined as "flow experiences", instead allow the individual to consider long-term personal goals differently and to experiment with changing them. In other words optimal experiences, when meaningful for the individual, widen the array of thoughts and actions, facilitating generativity and behavioral flexibility. Within this view, we defined *transformation of flow* as a person's ability to draw upon an optimal experience and use it to marshal new and unexpected psychological resources and sources of involvement.

Keywords: Personal change; TransTheoretical Model of Behavior Change; Perceptual Control Theory; Presence; Breakdowns; Optimal presence; Flow of Consciousness.

2.1 Introduction: The Process of Personal Change

How do we lastingly change our lives for the better? There is not an easy answer to this question. As noted by Higginson and Mansell (2008): "The mechanism of psychological change is not fully understood. This is clear in research demonstrating the efficacy of different therapeutic approaches and the significant rates of natural recovery." (p. 326).

On one side it is well known that different therapies can all facilitate psychological change (Stiles, Barkham, Mellor-Clark, & Connell, 2008; Stiles, Barkham, Twigg, Mellor-Clark, & Cooper, 2006). On the other side, it is also true that some people experience psychological change without the help of any form of treatment (Higginson & Mansell, 2008).

However, due to the advances in psychology and neuroscience we now have a better view of personal change that is not limited to a specific viewpoint. In particular, the emergence of integrative and transdiagnostic accounts suggests that change is contextual, depending on the person, the issues, and the situation (Kottler, 2014). Moreover, personal change is a process, happening in discontinuous and nonlinear ways, following life transitions and traumatic events (Hayes, Laurenceau, Feldman, Strauss, & Cardaciotto, 2007).

Between the transdiagnostic models of change, one of the most influential is the TransTheoretical Model of Behavior Change – TTC (Prochaska & DiClemente, 1982, 1983; Prochaska, DiClemente, & Norcross, 1992). In this model change implies phenomena occurring over time. However, this aspect is largely ignored by many theories of change. To overcome this issue, TTC describes personal change as a progression through a series of five stages: precontemplation, contemplation, determination, action, and maintenance (see Table 1 for a detailed description of these stages). These stages represent a temporal dimension that allows both the individuals and the persons supporting them to understand when particular shifts in attitudes, intentions, and behaviors occur.

Another influential transdiagnostic model of change is the Perceptual Control Theory – PCT (Higginson, Mansell, & Wood, 2011; Vancouver & Putka, 2000). According to PCT at the core of human nature is the process of control (Higginson et al., 2011): "life is a constant process of comparing how things are with how we want things to be and if they do not match doing something to get closer to how we want things to be." (p. 250).

Table 2.1: The TransTheoretical Model of behavior change (adapted from Prochaska & DiClemente, 1982, 1983; Prochaska, DiClemente, & Norcross, 1992).

	Definition	**Subjective Experience**
Precontemplation	The stage at which there is no intention to change behavior in the foreseeable future.	"*I do not have a problem*": the individual is not ready to change his/her behavior
Contemplation	The stage at which there is the recognition of the problem but it is still missing the commitment to take action.	*"I know I have a problem and need to change. I will do something about it, one day":* The individual is considering change, but he/she is not yet committed to it
Determination	The stage at which there is the decision to do something.	*"Yes I have a problem and I need to do something to change – now":* This stage opens for a limited time-period. If the individual moves into action, the process continues. If not, they lapse back into contemplation.
Action	The stage at which individuals modify their behavior, experiences, or environment in order to overcome their problems	*"I am doing something to change my behavior now*": This stage involves the most overt behavioral changes and requires considerable commitment of time and energy
Maintenance	The stage in which individuals work to prevent relapse and consolidate the gains attained during action.	*"I do not stop my work to prevent myself from losing the obtained gains":* This stage requires more and more practice to transform the new behaviors into habits.

In this view control is a process of reducing the distance between what we want and what we are (*error*). Interestingly, the source of errors is both *within* and *between* individuals (Gianakis & Carey, 2011; Higginson et al., 2011). Specifically, PCT suggests that a possible source of error is internal: the coherence between goals and subgoals of the individual (*conflict*).

To eliminate a conflict, the individual must direct his or her awareness to the experience that is creating the conflict. Then, a reorganization is required: a trial and error process which modifies the characteristics or the conflicting goals (Higginson & Mansell, 2008). A summary of the key concepts expressed by PCT is reported in Table 2.

Table 2.2: The Perceptual Control Theory (adapted from Higginson, Mansell, & Wood, 2011; Vancouver & Putka, 2000).

	Definition
Control	Keeping a variable within fixed limits despite outside disturbances.
Error	The difference between what we want and what we are currently experiencing.
Goals	What we want. Goals are set inside the individuals and are organized in a range of subgoals.
Conflict	The experience of incompatible subgoals for the individual's immediate experience.
Reorganization	A trial-and-error learning process that alters the way that we perceive our environment and set our goals until we manage to achieve them in the long term.
Awareness	The ability to perceive, or to be conscious of personal goals. For reorganization to be effective in the long term, awareness must be directed and sustained at personal higher level goals.

As noted by Kottler (2014), by merging these theories we can describe a process of change that basically follows this sequence (pp. 19-20):

1. there is an expressed desire for change that is triggered by a crisis, trauma, or developmental transition;
2. a level of pain and discomfort is reached that can't any longer be ignored or denied;
3. there is an awareness or insight that something different must be done;
4. there is a gradual process of applying what was realized or learned into constructive action;
5. there is recovery from inevitable relapses.

Within this process a critical milestone is the passage between stage 2 and 3. In general it occurs through an intense focus on the particular instance or experience creating the conflict (Wolfe, 2002). By exploring this experience as thoroughly as possible, the individual can relive all of the significant elements associated with it (i.e., conceptual, emotional, motivational, and behavioral) and make them available for reorganization.

Within this general model, different psychotherapies suggested specific approaches for exploring and modifying the conflicting experience: we can find the insight-based approach of psychoanalysis, the schema-reorganization goals of cognitive therapy, the functional analysis of behavioral activation, the interpersonal

relationship focus of interpersonal therapy, and the enhancement of experience awareness in experiential therapies.

What are the differences between them? According to Safran and Greenberg (1991) behind the specific therapeutic approach there are two different models of change: bottom-up and top-down. Bottom-up processing begins with a specific emotional experience and leads eventually to change at the behavioral and conceptual level; top-down change usually involves exploring and challenging tacit rules and beliefs that guide the processing of emotional experience and behavioral planning.

These two models of change are focused on two different cognitive systems, one for information transmission and one for conscious experience, both of which may process sensory input (Brewin, 1989; Kahneman, 2002). Stanovich & West (2000) noted that in the last forty years, different authors from different disciplines suggested a two-process theory of reasoning. Even if the details and specific features of these theories do not always match perfectly, nevertheless they share the following properties:

- Intuitive operations are faster, automatic, effortless, associative, and difficult to control or modify.
- Rational operations, instead, are slower, serial, effortful, and consciously controlled.

The differences between the two systems are described in Table 3.

Table 2.3: Differences between the Rational and the Intuitive systems.

	Rational System	**Experiential/Intuitive System**
Main Features	*Rational*: Conscious, deliberative and affect-free *Abstract*: Encodes reality in symbols, words, and numbers *Analytic*: Connections by cause-and-effect relations *Slower processing*: Capable of long delayed action *Less resistant to change*: Can change with speed of thought *More highly differentiated*: nuanced thinking *More highly integrated:* Organized in part by cross-situational principles *Experienced actively and consciously*: We believe we are in control of our thoughts *Not Self-evident:* Requires justification via logic and evidence	*Intuitive:* Preconscious, automatic, and intimately associated with affect *Concrete:* Encodes reality in images, metaphors, and narratives *Associative*: Connections by similarity and contiguity *Rapid processing:* Oriented toward immediate action *Resistant to change:* Changes with repetitive or intense experience *Differentiated:* Broad generalization gradient; categorical thinking *Integrated:* Situationally specific; organized in part by cognitive-affective modules *Experienced passively and preconsciously:* We are seized by our emotions *Self-evidently valid:* "Experiencing is believing"
How it works	Operates by reality principle (what is logical and supported by evidence) Acquires its beliefs by conscious learning and logical inference More process oriented Behavior mediated by conscious appraisal of events	Operates by hedonic principle (what feels good) Acquires its schemas by learning from experience Outcome oriented Behavior mediated by "vibes" from past experience

In sum we can identify some important properties of personal change:

- the focus of personal change is reducing the distance between goals and reality;
- this reduction is achieved through: a) an intense focus on the particular experience creating the conflict; b) a reorganization of this experience;
- the focus and reorganization of the experience may happen both at the intuitive and at the rational level;
- this reduction requires a complex process based on different stages.

As noted by different authors, these characteristics of personal change are now shared by many of the leading approaches to psychotherapy, including psychodynamic and cognitive behavioral therapy (Higginson et al., 2011; Kottler, 2014).

However, many people experience psychological change without the help of any form of treatment. How does this happen and why?

To answer these questions, the main tenets of this chapter are:

- *our cognitive system is naturally shaped to identify and counter experiential conflicts*;
- *this is achieved through a specific cognitive process – presence – whose goal is the control of the activity of the individual*: I am present in a real or virtual space if I manage to put my intentions into action (enacting them);
- *there is a link between presence and the effectiveness of an action*: the greater level of presence a subject experiences in an activity, the greater the individual's involvement in the activity will be, and this increases the probability of the activity ending well (the transformation of the intention into action);
- *there are "optimal experiences" in which both the individual experiences the maximum feeling of presence, and he/she is able to change/produce creative work more easily.*

In the following paragraphs we will endeavor to justify these claims. In order to do so, we will begin with the analysis of the transformations which are characterizing cognitive sciences.

2.2 A New Vision of Cognition

Different recent discoveries from cognitive sciences are suggesting that human cognition – rather than being centralized, abstract, and sharply distinct from peripheral input and output modules – has instead deep roots in sensorimotor processing.

An example of this trend is the recent discovery of neuronal resonance processes activated by the simple observation of actions. Rizzolatti and colleagues found that a functional cluster of premotor neurons (F5c-PF) contains two groups of "bimodal" neurons in which sensory and motor faculties are linked (Gallese, Fadiga, Fogassi, & Rizzolatti, 1996; Rizzolatti, Fadiga, Gallese, & Fogassi, 1996).

- the first group of neurons (F5ab-AIP) – known as "canonical" neurons, are activated when the individual sees an object with which he/she can potentially interact;
- the second group of neurons (F5c-PF) – known as "mirror**"** neurons, are activated when the individual sees another subject performing the same action.

The existence of bimodal neurons suggests that action and perception are more closely linked than has traditionally been assumed. Specifically, for the *Common Coding Theory* (Hommel, Müsseler, Aschersleben, & Prinz, 2001), the cognitive representations for perceived events (perception) and intended or to-be generated events (action) are formed by a common representational domain: actions are coded in terms of the perceivable effects they should generate. For example, "canonical" neurons permit an immediate and intuitive (pre-reflexive) understanding of opportunities for

interaction which various objects may offer (in the case of the handle of a coffee cup, the possibility of being taken hold of if the subject wants to drink).

For this reason, when an effect is intended, the movement that produces this effect as perceptual input is automatically activated, because actions and their effects are stored in a common representational domain: the sight of a red apple is believed to activate a simulation of the motor functions necessary to pick it up.

In simpler words, the brain has its own virtual reality system that is used in both action planning and action understanding. But how can the subject know whether his or her intention has really been transformed into an effective action? We shall try to answer this question in the following paragraph by introducing the concept of presence.

2.3 A Definition of Presence

The concept of "*presence*" originated from and was diffused by a technological scientific community at the same time as the introduction of a unique piece of communication technology, teleoperators: robots controlled from a distance by a human operator (Heeter, 1992). In this case the term telepresence refers to the human operator's sensation of being present in the remote location in which the teleoperator is situated (Held & Durlach, 1992). But am I present only when I'm experiencing a telepresence system or a virtual reality environment?

Obviously the answer is no. This is why recent neuropsychological studies suggest that presence has a key role in our cognitive processes: it can be described as the outcome of an intuitive metacognitive process that allows us to control our actions through the comparison between intentions and perceptions (Riva & Mantovani, 2012b).

According to Gamberini, Spagnolli and Mantovani, the sense of presence is linked to a subject's capacity for action and his ability to position himself within his physical and social space (Spagnolli & Gamberini, 2005). More precisely, for Spagnolli and Gamberini (2005): "Presence is the feature of the agent which is manifested through the creation of a space during action" (p. 8).

A similar, but broader view, was recently outlined by Riva and Waterworth (Riva, Waterworth, Waterworth, & Mantovani, 2011;Riva, Waterworth, & Murray, 2014; Waterworth, Waterworth, Mantovani, & Riva, 2010). The idea proposed by these authors is the following: presence can be described as a selective and adaptive mechanism which allows the Self to define the boundaries of action by means of the distinction between "internal" and "external" within the sensory flow (Riva & Mantovani, 2012a, 2012b). In other words, the subject is "*present*" in a space if he/she can act in it. Moreover, the subject is "*present*" in the space – real or virtual – where he/she can act in (Waterworth et al., 2010). Interestingly, what we need for presence are

both the affordance for action (the possibility of acting) and its enaction (the ability of successfully acting).

To sum up, we can define presence as the pre-reflexive sensation of "being" in an environment, real or virtual, which results from the capacity to carry out intuitively one's intentions within that environment (for a broader introduction to presence, check the open access book "Interacting with Presence" by Riva, Waterworth & Murray, 2014).

2.4 The Levels of Presence

An important consequence of this framework is the need to understand more what "acting successfully" means. We can start from the definition of "Agency": "the power to alter at will one's perceptual inputs" (Russell, 1996). But how can we define our will? A simple answer to this question is: through intentions. Following this line of reasoning, presence can be defined as "the non mediated (prereflexive) perception of using the body to successfully transform intentions into actions (enaction)" (Riva, 2007, 2008).

A possible criticism to this definition is the following (Riva, 2009): "I may be asked to repair a computer, and I may be unable to fix it. This does not mean that I am not present in the environment (real or virtual) where the computer and I are."

This objection makes sense if we use the folk psychology definition of intention: the intention of an agent performing an action is his/her specific purpose in doing so. However, the latest cognitive studies clearly show that, as also suggested by the Perceptual Control Theory discussed in the introduction, any behavior is the result of a complex intentional chain that cannot be analyzed at a single level (Pacherie, 2006; Searle, 1983).

According to the *Activity Theory* introduced by Leontjev and disseminated by Kaptelinin, & Nardi (Kaptelinin & Nardi, 2006; Leontjev, 1978), and to the *Dynamic Theory of Intentions* presented by Pacherie (Pacherie, 2006, 2008; Pacherie & Haggard, 2010) repairing a computer is driven by an above objective (e.g., obtaining the money for paying a new car) and is the result of lower-level operations (e.g., removing the hard disk or the CPU, cleaning them, etc.) each driven by specific purposes.

So, for an intention that failed (repairing the computer) many others were successful (removing the hard disk, cleaning it, etc.) inducing Presence (Riva, 2009, 2010).

Specifically, the *Dynamic Theory of Intentions* identifies three different "levels" or "forms" of intentions (*Figure 1*), characterized by different roles and contents: distal intentions (D-intentions), proximal intentions (P-intentions) and motor intentions (M-intentions):

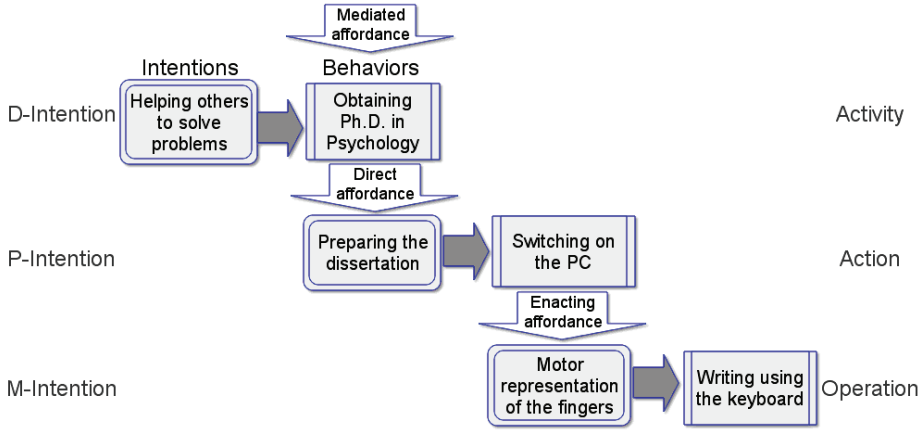

Figure 2.1: The intentional chain (from Riva and Mantovani, 2012a).

- *D-intentions (Future-directed intentions)*. These high-level intentions act both as intra- and interpersonal coordinators, and as prompters of practical reasoning about means and plans: in the activity "obtaining a Ph.D. in psychology" described in *Figure 1*, "helping others to solve problems" is a D-intention, the object that drives the activity of the subject.
- *P-intentions (Present-directed intentions)*. These intentions are responsible for high-level (conscious) forms of guidance and monitoring. They have to ensure that the imagined actions become current through situational control of their unfolding: in the activity described in *Figure 1*, "preparing the dissertation" is a P-intention.
- *M-intentions (Motor intentions)*. These intentions are responsible for low-level (unconscious) forms of guidance and monitoring: we may not be aware of them and have only partial access to their content. Further, their contents are not propositional: in the activity described in *Figure 1*, the motor representations required to write using the keyboard are M-intentions.

Any intentional level has its own role: the rational (D-intentions), situational (P-Intention) and motor (M-Intention) guidance and control of action. They form an intentional cascade (Pacherie, 2006, 2008) in which higher intentions generate lower intentions.

Even if presence is a unitary feeling, the hypothesis formulated by Riva and Waterworth (Riva & Waterworth, 2003; Riva, Waterworth, & Waterworth, 2004) suggests that, on the process side, it can be divided into three phylogenetically different

layers/subprocesses , that correspond reasonably well to the three levels of intentions identified by Pacherie (*Figure 2* and Table 4):

Table 2.4: The layers of presence

Layer	Definition	Evolutive Role
Proto Presence	The ability to enact motor intentions by moving the body.	The more the organism is able to *correctly associate stimuli to movement in sensorial flow,* the better it is able to differentiate itself from its external surroundings and thus increase its chances of survival.
Core Presence	The ability to enact proximal intentions through the identification of direct *affordances*.	The better the organism is able to distinguish between imagination and perception, planning and action, the greater its chances of survival will be.
Extended Presence	The ability to enact distal intentions through the identification of indirect *affordances*.	The better the organism is able to separate itself from the present and *identify within its own representations those most relevant,* the greater are its chances of survival.

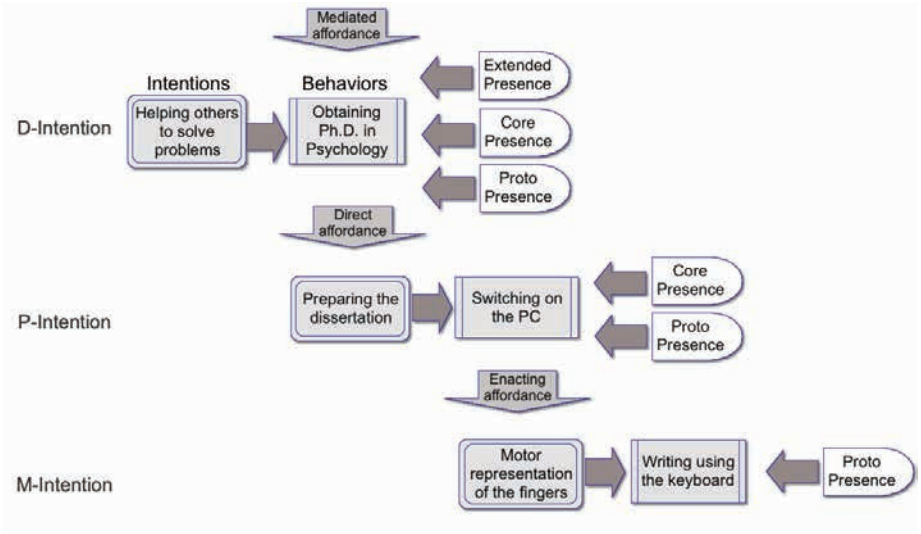

Figure 2.2: Layers of presence in human activity.

1. *Proto Presence:* Motor Intentions (Self vs. non Self);
2. *Core Presence:* Proximal Intentions, directed towards the Present (Self vs. actual external world);
3. *Extended Presence:* Distal Intentions, directed towards the Future (Self vs. possible/future external world).

In practice, the Self evolves by extending the boundaries of its actions through the acquisition higher levels of intentional ability.

In fact, the three levels of intention are differentiated by the limits to the actions which the subject is able to perform. The boundaries of the actions resulting from motor intentions are defined by the relationship between body and mind: I can only move my body. The boundaries of the actions resulting from proximal intentions depend upon the relationship between the mind and the physical world: I can only interact with the objects which are present around me. The boundaries of the actions resulting from distal intentions are given by the relationship between the mind and the possible world: I can try to do everything that I can imagine doing.

This view suggests that when the subject is present during agency – he/she is able to successfully enact his/her intentions – he/she locates him/herself in the physical and cultural space in which the action occurs.

Moreover, it also suggests that the feeling of presence will be different according to the ability of the subject to enact his/her intentions within an external environment. For instance, in the movie "Pretty Woman" Julia Robert is in a restaurant for a formal dinner with Richard Gere, but she doesn't know how to use the snail tongs and the snail forks she has nearby her dish. In this situation Julia is physically there, but the lack of knowledge puts her outside, at least partially, from the social and cultural space of the "formal dinner". The result is reduced presence and a limitation in her agency: she is not able to enact her intention (opening an escargot) using the snail forks, and this puts her in an embarrassing situation (she launches the escargot across the restaurant).

In conclusion, from an evolutionary point of view, presence has three functions:

- To permit the subject to position himself in a space – real, virtual or social – through the distinction between "internal" and "external" and the definition of a boundary;
- To check the efficacy of the subject's actions through the comparison of intention and the result of the action. From a computational viewpoint, the experience of presence is achieved through a forward-inverse model (*Figure 3*) that is similar to the negative feedback loop described by Perceptual Control Theory to reduce errors:
- First, the agent produces the motor command for achieving a desired state given the current state of the system and the current state of the environment;

- Second, an efference copy of the motor command is fed to a forward dynamic model that generates a prediction of the consequences of performing this motor command;
- Third, the predicted state is compared with the actual sensory feedback. Errors derived from the difference between the desired state and the actual state can be used to update the model and improve performance.

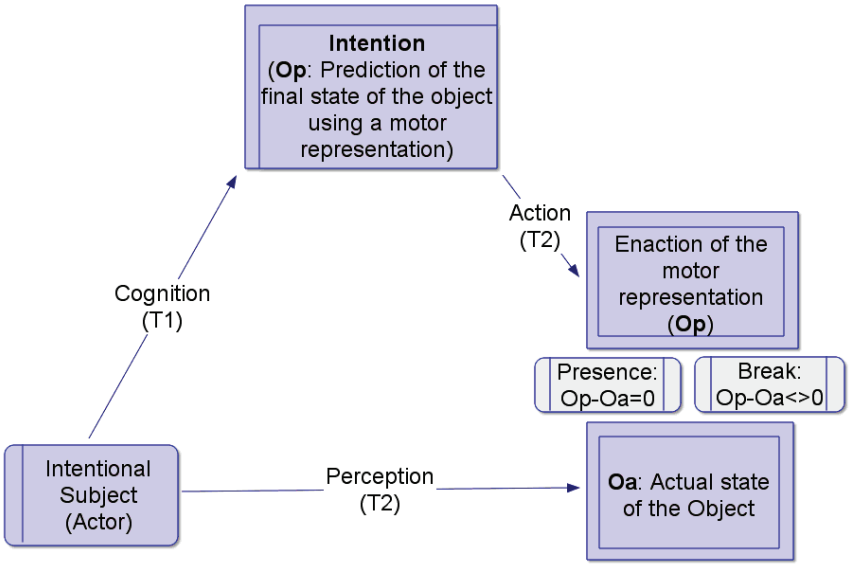

Figure 2.3: The experience of presence

- To allow its own evolution through the identification of *"optimal experiences" (Flow)* and the incorporation of the artifacts – physical and social – linked to it.

2.5 Presence and Optimal Experiences

In the previous paragraph we introduced a critical feature of presence: it *provides the self with a feedback about the status of its activity*. Specifically, the self perceives the variations in the feeling of presence (*breakdowns* and *optimal experience*) and tunes its activity accordingly (Riva, 2006; Riva & Waterworth, 2014).

Winograd and Flores (Winograd & Flores, 1986) refer to presence disruptions as *breakdowns:* a *breakdown* occurs when, during our activity, an aspect of our environment that we usually take for granted becomes part of our consciousness. If this happens, we shift our attention from action to the object or environment to cope with

it, as predicted by the Perceptual Control Theory (Higginson et al., 2011; Vancouver & Putka, 2000).

It is interesting to consider why we experience these breakdowns. Our hypothesis is that breakdowns are a sophisticated evolutionary tool used to control the quality of experience that ultimately enhances our chances of survival, by promoting personal change (Riva et al., 2004; Riva et al., 2011). Specifically, the subject tries to overcome any breakdown in its activity and searches for engaging and rewarding activities (optimal experiences).

During breakdowns we experience a lower level of presence. This reduces the quality of experience, and leads us to confront environmental difficulties through an attentive shift. As suggested by the Perceptual Control Theory, breakdowns push the individual to reorganize his/her goals (Higginson et al., 2011): "It is a trial-and-error learning process that randomly alters the way that we perceive our environment and set our goals until we manage to achieve them in the long term" (p. 251).

For example, if during a virtual reality experience, my arm moves and suddenly comes into contact with a cable, I immediately become aware of the change at the level of proto presence and I shift my attention from my virtual reality experience to the cable which is impeding my movement to move it away (Spagnolli & Gamberini, 2002).

The same is true for the other presence levels. If the reality TV show the subject is watching becomes boring or upsetting, the subject becomes immediately aware of the variation in the level of extended presence, and can decide whether or not to pick up the remote control and change channel (Riva & Mantovani, 2012a).

However, there are particular situations in which our actions are so fluent and effective that they produce a feeling of maximum presence. When this experience of full control and immersion is associated to a positive emotional state, it can create an optimal experience usually defined "flow state" (Csikszentmihalyi, 1990, 1994; see also chapter one).

An example of flow is the case where a professional athlete is playing exceptionally well (positive emotion) and achieves a state of mind where nothing else matters but the game (high level of presence). For Ghani and Deshpande (1994) the two main characteristics of flow are (a) the total concentration in an activity and (b) the enjoyment which one derives from the activity. Moreover, these authors identified two other factors affecting the experience of flow: a sense of control over one's environment and the level of challenge relative to a certain skill level. Finally, flow provides to the individual an intrinsic motivation. In other words, the motivation to engage in a flow-inducing behavior arises from within the individual because it is intrinsically rewarding (Ryan & Deci, 2000).

In sum flow is characterized by (Csikszentmihalyi, 1990, 1994):

- a high level of concentration and participation in the activity;
- by the balance of the perception of the difficulties of the situation and the *challenge*, and personal *skills;*

- by the distortion of the sense of time (the internal clock slows down, whilst the external one speeds up);
- and by a natural interest in the process which produces a sense of pleasure and satisfaction.

2.6 Optimal Experiences and Personal Change

The role of breakdowns in personal change is clear: to push individuals towards it. By perceiving a conflict (awareness) between different goals – for example, watching a boring tv program and having an engaging experience – the subject is pushed to resolve the conflict between them. But what is the role of optimal experiences?

As suggested by different authors, the role of optimal experiences is to produce flourishing (Fredrickson & Branigan, 2005; Fredrickson & Losada, 2005; Johnson, Waugh, & Fredrickson, 2010; Kok et al., 2013; Van Cappellen, Saroglou, Iweins, Piovesana, & Fredrickson, 2013): to live in good mental and physical health, experiencing goodness, generativity, growth, and resilience. This is achieved by broadening the individual's momentary thought-action repertoires, widening the array of the thoughts and actions that come to mind.

Let's try to clarify this point. As underlined in the previous paragraph, breakdowns push the individual to reorganize his/her goals. However, to be effective in the long term, reorganization needs to affect the higher level goals (Higginson et al., 2011):

Individuals need to change the long-term personal goals rather than simply modifying different routines and habits. To achieve this individuals have to consider both long-term personal goals differently and start to experiment with changing them. This is what is offered by optimal experiences (Fredrickson & Branigan, 2005; Fredrickson & Losada, 2005): to widen the array of thoughts and actions called forth (e.g., play, explore), facilitating generativity and behavioral flexibility.

However, the outcomes of optimal experience are not automatically positive. As noted by Delle Fave and colleagues (Delle Fave, Massimini, & Bassi, 2011), they vary according to the meaning attributed to them: only the optimal experience that has a relevant meaning for the individual experiencing it (high level of extended presence) is able to sustain and promote personal change (see *Figure 4*).

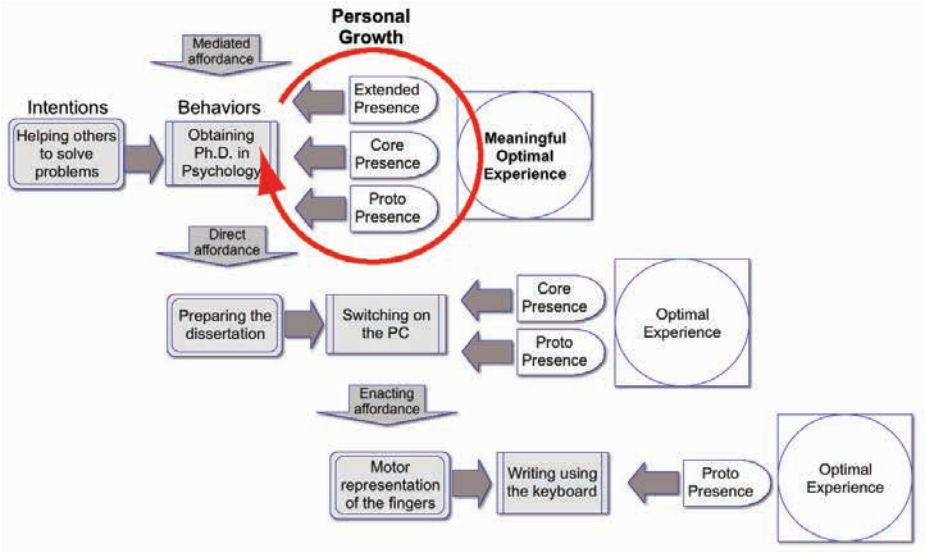

Figure 2.4: Presence and Optimal Experiences.

Within this context, the *transformation of flow* can be defined as a person's ability to draw upon a meaningful optimal experience and use it to marshal new and unexpected psychological resources and sources of involvement (Riva, Castelnuovo, & Mantovani, 2006; Riva, Mantovani, & Gaggioli, 2004).

As underlined by Massimini and Delle Fave, (2000): "To replicate [optimal experiences], a person will search for increasingly complex challenges in the associated activities and will improve his or her skill, accordingly. This process has been defined as cultivation; it fosters the growth of complexity not only in the performance of flow activities but in individual behavior as a whole." (p. 28). In other word, our cognitive system selects and cultivates activities, interests and relationships – also mediated by technologies and tools (for deepening this point see also the next Chapter and Gaggioli & Riva, 2014) – associated with meaningful optimal experiences.

Put differently, meaningful optimal experiences carry indirect and long-term adaptive value because they facilitate personal change through the emergence of new solutions and skills.

The previous chapter introduced and discussed the concept of "Psychological Selection" (Delle Fave et al., 2011; Inghilleri, 1999; Massimini, Inghilleri & Delle Fave, 1996) that further develops the concepts discussed in these pages by linking optimal experience to the social dimension. (A detailed analysis of the link between the social dimension and optimal experiences can also be found in Chapter 4).

2.7 Conclusions

How do we lastingly change our lives for the better? The chapter presented a possible answer to this question by focusing on the concept of personal change.

As underlined by recent research in psychology and neuroscience, personal change is a complex process depending on the person, the issues, and the situation. However, by merging the ideas of two influential transdiagnostic models of change – the Perceptual Control Theory (Higginson et al., 2011; Vancouver & Putka, 2000) and the TransTheoretical Model of Behavior Change (Prochaska & DiClemente, 1982, 1983; Prochaska et al., 1992) – it is possible to describe a process of personal change (Kottler, 2014) following this sequence (pp. 19-20):

1. there is an expressed desire for change that is triggered by a crisis, trauma, or developmental transition;
2. a level of pain and discomfort is reached that can't any longer be ignored or denied;
3. there is an awareness or insight that something different must be done;
4. there is a gradual process of applying what was realized or learned into constructive action; and there is recovery from inevitable relapses.

Even if these characteristics of personal change are now shared by many of the leading approaches to psychotherapy, many of us experience psychological change without the help of any form of treatment. How and why?

In the chapter we suggested that our cognitive system is naturally shaped to identify and counter the experiential conflicts that are described in the points 1 and 2 of the above list.

This is achieved through a specific cognitive process – presence – the goal of which is to control the the activity of the individual: I am present in a real or virtual space if I manage to put my intentions into action (enacting them).

On one side, there is a link between presence and the effectiveness of an action: the greater level of presence a subject experiences in an activity, the greater the individual's involvement in the activity will be, and this increases the probability of the activity ending well (the transformation of the intention into action).

On the other side, presence provides the self with a feedback about the status of its activity. Specifically, the self perceives the variations in the feeling of presence (breakdowns and optimal experience) and tunes its activity accordingly.

The role of breakdowns in personal change is clear: to push individuals towards it. By perceiving a conflict (awareness) between different goals the subject is pushed to resolve the conflict between them.

Optimal experiences, also defined as "flow experiences", instead allow the individual to consider their long-term personal goals differently and start to experiment with changing them. In other words optimal experiences, when meaningful for the individual, widen the array of thoughts and actions, facilitating generativity and

behavioral flexibility. Within this view, we defined *transformation of flow* a person's ability to draw upon a meaningful experience and use it to marshal new and unexpected psychological resources and sources of involvement.

Obviously, this chapter has its limitations: the framework here introduced is still in progress and some of the claims presented require additional theoretical work and an empirical confirmation. Nevertheless, quite independently of the intricacies of terminology and conceptualizations, we hope that the framework discussed in these pages and in the next chapter will help to disentangle the variety of claims and theories that characterizes the positive side of personal change.

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