When Persistence is Futile:

A Functional Analysis of Action Orientation and Goal Disengagement

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As the ancient Greek hero Sisyphus knew, there may be no more dreadful fate than performing some futile activity without end. Sisyphus was condemned to incessantly rolling a rock to the top of a mountain, from where it would fall back from its own weight. Existentialist philosophers have regarded Sisyphus' condition as a metaphor for the futility of life itself (Camus, 1955). From a psychological perspective, however, one may wonder why Sisyphus never disengaged from his frustrating activity even though he knew it was pointless.

The problem of how to disengage from unattainable goals does not only concern classical heroes but also modern-day people. Contemporary Western culture has glorified "go-getters" who persist in the face of insurmountable obstacles, and dismisses those who give up as "losers". However, a number of psychologists have suggested that disengagement can often be an adaptive response to situations in which further investment of time and resources is in undue proportion to the expected outcomes (Baumeister & Scher, 1988; Klinger, 1975; Wrosch, Scheier, Carver, & Schulz, 2003). Disengagement from unattainable goals can indeed have many benefits such as financial gains (Gilovich, 1983), improved decision making (Brockner, 1992), enhanced emotional well-being (Wrosch & Heckhausen, 1999) and better health (Wrosch, Miller, Scheier, & Brun de Pontet, 2007). These findings suggest that disengagement may be an adaptive strategy when persistence is futile.

Previous research has offered a variety of explanations why and when people might disengage from unattainable goals. Classic explanations emphasized the importance of people's beliefs regarding the costs and benefits of further goal persistence or goal disengagement (e.g., Carver & Scheier, 2005; Klinger, 1975). In this chapter, however, we take a functional perspective, which is grounded in recent theories of human action control (Kuhl, 2000). In our view, goal disengagement

involves the *updating* of working memory such that unattainable goals are erased and alternative goals can be processed. Updating of working memory is facilitated among *action-oriented* compared to *state-oriented* individuals, especially under demanding or threatening conditions. In the remainder of this chapter, we first present a theoretical analysis of goal disengagement and action orientation versus state orientation. Next, we discuss existing evidence that supports our analysis. Finally, we present some ideas that might further advance the understanding of goal disengagement processes.

Goal Dilemmas: Hanging On or Letting Go?

Reality imposes substantial constraints on the kind and number of goals that people can achieve simultaneously, or even in a lifetime. Therefore, most people will try to select goals that they expect to be attainable rather than unattainable. Unfortunately, however, expectations can be wrong and circumstances change, so that initially prioritized goals become more difficult than expected. Unforeseen difficulties confront people with a fundamental goal dilemma. On the one hand, people should not let go of their goals too easily but protect them against time delays, set-backs, and distracters. Indeed, failure to persist in the presence of obstacles may lead to incoherent and erratic behavior. On the other hand, however, people should not hang on to their goals at all costs. Indeed, never altering the course of one's strivings makes behavior inflexible and rigid. When goals become unexpectedly difficult, the dilemma thus lies in reconciling the opposing requirements of goal persistence and goal disengagement (Carver & Scheier, 2005; Goschke, 2003; Mayr & Keele, 2000).

Previous theorizing has identified two important factors that predict whether people hang on or let go during unexpected difficulties. One factor relates to the perceived value of the goal. If the goal is highly valuable, people are more inclined to hang on to it than when the goal is less valuable. The second factor relates to the

expectancy that one is able to attain the goal. When people expect that they still have the capacity to attain the goal, they are more likely to persist compared to when they consider their capacities as insufficient. Expectancy and value have interactive effects on goal commitment. If value and expectancy are both high, people are more likely to hang on than when only value or only expectancy is high (Brehm & Self, 1989; Carver & Scheier, 2005; Klinger, 1975; Shah & Higgins, 1997).

Expectancy and value can change during goal pursuit. In his classic analysis, for instance, Klinger (1975) suggested that frustration about unexpected difficulties makes people regard the frustrated goal as more valuable. As a consequence, people increase their efforts and strive for their goal more vigorously. When the goal remains frustrated despite increased efforts, however, a downswing into depression follows. During this stage, people experience depressive symptoms such as disappointment, apathy, and grief. A possible adaptive function of the depressive stage is devaluation of the goal. Devaluation of the goal leads to disengagement and finally, if new valuable goals emerge, to recovery from the depressive symptoms.

People thus invest more effort when the goal renders more difficult (Brehm & Self, 1989). When even high effort is futile, however, people change their expectations and consider the goal as no longer attainable. People may remain nevertheless committed to their unattainable goal. The resulting immobility can cause distress and feelings of helplessness (Wrosch et al., 2003). Dissolving one's commitment is especially difficult when no valuable alternatives are available (Aspinwall & Richter, 1999), or when past investments were high and people believe that they are drawing ever closer to the goal (Arkes & Blumer, 1985; Brockner, 1992). Another problem is that people do not always take into account past experiences. Optimism, confidence, and other positive illusions may indeed turn "losses into near wins" (Gilovich, 1983),

thereby leaving people more likely to persist. By contrast, pessimism and doubt leave people more likely to disengage from a failing goal (Carver & Scheier, 2005).

A Functional Perspective on Goal Disengagement

As we have seen, previous research on goal disengagement has traditionally emphasized the role of people's beliefs regarding the costs and benefits of further persistence versus disengagement. However, beliefs do not always predict actual behavior (Eagly & Chaiken, 1993). For instance, people may hold pessimistic beliefs about their unattainable goals but nevertheless fail to disengage from them. Likewise, people may fail to mobilize their efforts even though their expectancies of success are high. To explain these and other shortcomings of the expectancy-value approach, various theorists have sought to develop a functional perspective on goal disengagement (Gollwitzer, 1996; Jostmann & Koole, 2006; Kuhl, 1984, 2000).

A functional perspective examines how basic cognitive and affective processes shape goal disengagement processes irrespective of the specific contents of people's beliefs (Kuhl, 2000). Notably, a functional perspective does not disregard the importance of belief systems. In line with the expectancy-value perspective, the functional perspective acknowledges that different beliefs can lead to different classes of behavior. However, a unique element of the functional perspective is the focus on the mental mechanisms that cause beliefs to have an impact on behavior. The two perspectives are thus partly based on similar assumptions, but there also exist important differences. The functional perspective should therefore be regarded as a complement to the classic expectancy-value perspective rather than as an attempt at its replacement. Indeed, contemporary theorizing on goal disengagement often includes elements from both perspectives (e.g., Brandtstädter & Rothermund, 2002; Carver & Scheier, 2005; Kuhl, 1981).

According to the present functional perspective, goals constitute symbolic mental representations of action plans that guide people toward the attainment of particular incentives or toward the avoidance of particular disincentives ("I will do behavior X in order to attain situation Y or to avoid situation Z"). After their formation, goals often remain represented in an *implicit* format that does not require conscious attention until enactment is initiated by appropriate situational cues, or after a predefined period of time has elapsed (Gollwitzer, 1996). However, goals can also be represented in an *explicit* format. Explicit goals are not consciously represented at all times. However, they remain in a state of heightened activation that makes them easily accessible for conscious awareness (Anderson, 1983; Goschke & Kuhl, 1993).

Explicit goal formats are especially appropriate when goal pursuit renders unexpectedly difficult because explicit formats facilitate deliberate planning and analytical thinking (Bongers & Dijksterhuis, in press; Mayr, 2004; Norman & Shallice, 1986). Accordingly, the explicit format may be the most relevant format in the context of goal disengagement. The cognitive system that supports explicit goal formats is referred to as *working memory* (Baddeley, 1986; Engle, Tuholski, Laughlin, & Conway, 1999).[1] Working memory belongs to a greater network of executive functions that consists of short-term storage components and attentional control processes. Due to capacity constraints, working memory can only process a limited amount of explicit information simultaneously.

Unlike other mental representations, goals can remain activated for extended periods of time despite changes in the environment or one's motivational states. A likely purpose of such "self-sustained activation" (Anderson, 1983) is to ensure behavioral stability and coherence over time and during changing conditions. Self-sustained activation forms the basis of some of the key features of goal pursuit such as

persistence in the presence of obstacles or the resumption of interrupted goals. It usually vanishes not until a goal has been successfully attained (cf. Mayr & Keele, 2000). A well-known instance of self-sustained activation is the so-called Zeigarnik effect, which reflects privileged cognitive availability in working memory of uncompleted relative to completed or non-intended activities (Zeigarnik, 1927; cf. Förster, Liberman, & Higgins, 2005; Goschke & Kuhl, 1993).

Sustained activation of goals in working memory is conducive to goal persistence during obstacles or delays. In the case of unattainable goals, however, sustained goal activation becomes problematic because it impedes goal disengagement. Sustained activation of unattainable goals can cause recurrent, uncontrollable thoughts and unwanted feelings (cf. Blascovich & Mendes, 2000; Martin & Tesser, 1996; Savitsky, Medvec, & Gilovich, 1997). One can distinguish between two types of conditions (Baumann, Kaschel, & Kuhl, 2005; Carver & Scheier, 2005; Higgins, 1987). First, people who ruminate about goals that they ideally would like to attain may experience reduced positive affect and feelings of weariness, dissatisfaction, or depression. In the present context, we term such a condition *demanding*, whereas we term the absence of such a condition *nondemanding*. Second, people who ruminate about goals that they ought to attain, may experience increased negative affect and feelings of worry, agitation, or anxiety. We term such a condition *threatening*, whereas we term the absence of such a condition *nonthreatening*.

Demand and threat strain the limited capacity of working memory. As a consequence, attentional focus unduly prioritizes irrelevant information that is related to unattainable goals at the cost of relevant information that is related to new and potentially attainable goals (Cohen, Dixon, & Lindsay, 2005; Klein & Boals, 2001). Moreover, if goal activation continues for some time, it can reduce people's limited

energy resources until insufficient resources remain available for the processing of new goals (Schmeichel, 2007). In view of these undesirable consequences, it is important that people are able to terminate the sustained activation of unattainable goals in working memory. From the present functional perspective, terminating sustained goal activation can be regarded as one of the key indicators of successful goal disengagement.

Updating of Working Memory

How can people terminate the activation of unattainable goals in working memory? One possibility is that people deliberately direct their attention away from the goal. Recent research indeed suggests that people can clear their minds from negative experiences when they engage in new tasks that require working memory (Van Dillen & Koole, 2007). Unfortunately, people may lack the energy or opportunity to find such new tasks. Moreover, deliberate attempts to focus on something else may leave goals in a subconscious state of heightened activation, from where they can easily return into focal attention. Indeed, the deliberate suppression of unwanted thoughts or unpleasant feelings often causes rebound effects after some time (Wenzlaff & Wegner, 2000). Thus, people may not be able to terminate sustained goal activation effectively through deliberate strategies.

In the present chapter, we suggest an alternative mechanism for refreshing the contents of working memory that does not rely on deliberate processing. Specifically, we suggest that sustained activation of unattainable goals terminates when working memory opens up to external information. Recall that, for the sake of behavioral stability and coherence, goals are usually protected against external information. When such protection is taken away, however, stored goals in working memory become aligned with perceptual information about the environment or with one's motivational

preferences. As a consequence of such alignment, unattainable goals may be revised, replaced by alternative goals, or even completely relinquished. We refer to this process as the *updating* of working memory (cf. Braver & Cohen, 2000; Kuhl, 2000).

In functional terms, working memory updates its contents when the cognitive pathways between working memory on the one hand and perceptional and motivational systems on the other hand are facilitated. Based on recent theories of human action control (Kuhl, 2000), we suggest that two systems are particularly relevant for the updating of working memory (see Figure 1). The first system is referred to as the *intuitive behavior control* (IBC) system. The IBC regulates automatic behavior based on stored associative links between perceptual input and behavioral output. It operates largely on unconscious levels and can simultaneously process perceptual information from various modalities including information about the external world and internal states (e.g., hunger). Through a cognitive pathway, IBC can communicate with working memory. During such systems interactions, perceptual input can enter working memory and align its contents.

The second system is referred to as *extension memory* (Kuhl, 2000), an extended network of cognitive-emotional information that operates largely on unconscious levels and according to parallel-distribution principles. One important function of extension memory is to provide access to one's implicit motives, or unconscious motivational preferences (cf. McClelland, Koestner, & Weinberger, 1989; Schultheiss, 2008). Extension memory thus provides information about which incentives people find particularly valuable (e.g., to affiliate with others, to control others, or to achieve), and which types of actions are likely to lead to their attainment. Through a cognitive pathway, extension memory informs working memory what incentives are important to

strive for under the current circumstances and what action alternatives are potentially worthwhile to replace the failing goal that is currently processed in working memory.

According to recent theories of action control (Kuhl, 2000; cf. Braver & Cohen, 2000), the cognitive pathways between working memory, IBC and extension memory are modulated by positive and negative affect. First, the pathway between working memory and IBC is modulated by positive affect. When positive affect is decreased, the pathway is blocked thereby inhibiting the communication between the two systems. By contrast, when positive affect is increased, the pathway blockage is released so that working memory and IBC can interact (cf. Dreisbach & Goschke, 2004; Kuhl & Kazén, 1999). Second, the pathway between working memory and extension memory is modulated by negative affect. When negative affect is increased, the pathway is blocked. Conversely, interactions between working memory and extension memory are facilitated when negative affect is decreased (cf. Baumann & Kuhl, 2002, 2003).

Frustrated goal pursuit can thus impair the flow of information between cognitive systems. When people experience threat because they fail at goals that they ought to attain, increased negative affect renders extension memory inaccessible. Consequently, threat renders the alignment of explicit goals in working memory with implicit motives in extension memory difficult. When people encounter demands because they fail at goals that they would like to attain, decreased positive affect reduces the influence of IBC on working memory. Under high demands, explicit goals thus cannot be sufficiently aligned with current information about the external world or internal states. Moreover, because decreases in positive affect can lead to increases of negative affect, low positive affect may also contribute indirectly to the inaccessibility of extension memory (Kuhl, 2007). In sum, aversive affective reactions during

demanding or threatening situations render goal disengagement more difficult because they impair the updating of working memory.

The Moderating Role of Action versus State Orientation

At first glance, demanding and threatening conditions seem to have conflicting effects on goal pursuit. On the one hand, demand and threat impair the updating of working memory thereby rendering disengagement from unattainable goals difficult. On the other hand, however, demand and threat signal that working memory should update its contents and potentially disengage from the goal because unexpected difficulties have occurred. The paradox can be resolved if one considers that demand and threat represent an initial, *evaluative* response to unexpected difficulties. Adaptive goal pursuit likely requires a secondary, *regulatory* response in order to initiate appropriate corrective adjustments (cf. Botvinick, Braver, Barch, Carter, & Cohen, 2001; Carver & Scheier, 2005). We suggest that an important regulatory response to demand or threat is the updating of working memory.

People may not always be able to deal effectively with demands or threats. Accordingly, there might be moderators that determine whether people can successfully update their working memory under demands or threat. Based on action control theory (Kuhl, 1984, 2000), we suggest that one important moderator may be a person's *action orientation* versus *state orientation*. Action orientation is associated with high coping abilities during demand and threat, whereas state orientation is associated with low coping abilities. There are two major dimensions of action versus state orientation. First, action versus state orientation on the demand-related dimension (AOD) is characterized by initiative and decisiveness (action orientation) versus hesitation and indecisiveness (state orientation) during demands. Second, action versus state orientation on the threat-related dimension (AOT) determines whether people become

challenged (action orientation) or remain threatened (state orientation) during situations that potentially jeopardize their well-being or self-image.[2] AOD and AOT are interrelated but independent regulatory dimensions. Accordingly, a person can be action-oriented on one dimension but state-oriented on the other dimension and vice versa.

Action orientation can be considered a skill that people acquire depending on their socialization experiences (Koole, Kuhl, Jostmann, & Finkenauer, 2006; Kuhl, 2000). Environments that encourage people to motivate themselves during hindrances are likely to promote action orientation in dealing with demands. By contrast, environments that discourage people from motivating themselves (i.e., overly controlling or neglecting environments), are likely to promote state orientation in dealing with demands. Moreover, environments that are comforting when people express their motivational preferences (which is functionally equivalent to the activation of extension memory) during stressful situations are likely to foster action orientation in dealing with threatening conditions. By contrast, a state orientation in dealing with threatening conditions develops when such comforting responses to expressions of one's motivational preferences are absent or inadequate.

Through repeated learning experiences, people may acquire a stable disposition toward action versus state orientation in dealing with demands or threats. Based on this assumption, Kuhl (1994) developed a self-report questionnaire to assess individual differences in action versus state orientation. Each item on the questionnaire presents an aversive situation and an action-oriented or state-oriented way to respond to the situation. The demand-related dimension (AOD) and the threat-related dimension (AOT) are measured on two different subscales. Illustrative items can be found in Table 1. Based on people's responses, they can be classified as either predominantly action-

oriented or predominantly state-oriented in each of the two dimensions. During young adulthood, research populations in Germany, the Netherlands, and the United States have often been found to consist of equal numbers of action-oriented and state-oriented individuals (e.g., Diefendorff, Lord, Hepburn, Quickle, Hall, & Sanders, 1998; Koole, 2003; Kuhl, 1994). During later life periods, however, increased experiences in coping with aversive situations may render people more action-oriented (Gröpel, Kuhl, & Kazén, 2004).

We suggest that better coping skills among action- compared to state-oriented individuals are due to their more effective updating of working memory under high demands or threat. Under high demands, action-oriented individuals' tendency toward initiative and decisiveness likely reflects the efficient use of working memory. By contrast, state-oriented individuals' tendency toward hesitation and indecisiveness under demands may indicate that they use their working memory inefficiently because information is processed extensively, even when quick decisions are appropriate. Likewise, action-oriented individuals' tendency to terminate excessive ruminations under threat may reflect efficient working memory use. By contrast, state-oriented individuals' tendency to remain preoccupied with threatening experiences indicates inefficient use of working memory. Taken together, action-oriented individuals on either dimension of this personality construct may be better able to update their working memory compared to their state-oriented counterparts.

Better updating of working memory among action- compared to state-oriented individuals likely facilitates goal disengagement. However, updating may not indiscriminately erase explicit goals from working memory. Rather, updating is likely to lead to disengagement from only those goals that are unattainable or disproportionally costly to pursue. When a goal is difficult but still attainable, however,

updating may even lead to greater persistence. The latter case arises when IBC and extension memory inform working memory that, in spite of the current difficulties, the current goal remains the most viable option. Consequently, action-oriented individuals under demand or threat presumably disengage from their goals when updating reveals valuable alternative options, but they persist when such options are absent.

Based on recent insights on human action control (Kuhl, 2000), we propose that goal disengagement is a function of successful exchange of information between cognitive systems. The quality of the disengagement process is reflected by the workings of the individual systems and also by the overall behavioral outcome of the interaction between systems. We therefore suggest that goal disengagement can be decomposed into *cognitive disengagement* or efficient clearance of intrusive thoughts from working memory, *affective disengagement* or effective downregulation of unwanted feelings, and *motivational disengagement* or rejection of explicit goals that are not in line with one's implicit motives. On the level of overall systems interactions, goal disengagement is reflected by *behavioral disengagement* or the ability to successfully switch to new activities. An overview of these various types of disengagement and their definitions is provided in Table 2.

Empirical Evidence on Action versus State Orientation

Empirical research over the past 25 years has revealed that action versus state orientation moderates goal pursuit across a broad range of different domains including education, health, work, and sports (for reviews, see Diefendorff, Hall, Lord, & Strean, 2000; Kuhl & Beckmann, 1994a). For instance, action- compared to state-oriented individuals have been found to be more successful in pursuing their academic careers (Diefendorff et al., 1998), recover more quickly from medical surgery (Kuhl, 1983), perform better at the workplace (Diefendorff et al., 2000), and display greater athletic

performance, especially when performance pressure is high (Heckhausen & Strang, 1988).

In this section, we consider evidence suggesting that action versus state orientation moderates the updating of working memory and, consequently, goal disengagement under demanding or threatening conditions. As noted above, we decompose goal disengagement into the more specific components of cognitive disengagement, affective disengagement, motivational disengagement, and behavioral disengagement. We first review research on goal disengagement among action- versus state-oriented individuals under high demands (AOD), followed by a review of research on goal disengagement among action- versus state-oriented individuals during threatening conditions (AOT).

Goal Disengagement under High Demands

High demands occur when individuals have to pursue their goals in the face of great difficulties. In the literature on action versus state orientation, these difficulties have been operationalized in various ways, for instance, as time pressure (Stiensmeier-Pelster, 1994), demanding relationship partners (Jostmann & Koole, 2006), performance pressure (Heckhausen & Strang, 1988), or prospective memory load (Jostmann & Koole, 2007). Throughout these various operationalizations, demand-related action orientation emerged consistently as a moderator of goal disengagement processes. In this section, we review relevant research findings on the AOD facet of action orientation.

Cognitive Disengagement. Cognitive disengagement refers to the important task of clearing intrusive thoughts from working memory. Various strands of evidence suggest that action-oriented individuals are more efficient at cognitive disengagement than their state-oriented counterparts, particularly under high demands. Action-oriented

individuals report fewer everyday lapses of attention (Kuhl & Fuhrmann, 1998) and less intrusive thoughts (Kuhl & Goschke, 1994) than state-oriented individuals. Moreover, action-oriented individuals use more efficient and parsimonious decision-making strategies under time pressure than state-oriented individuals (Stiensmeier-Pelster, 1994). Additional research suggests that cognitive disengagement among action-oriented individuals occurs under high demands but not under low demands (Jostmann & Koole, 2006). In this research, participants first either visualized interacting with a demanding person or with an accepting person. Subsequently, all participants performed an operation span task, which measures how efficiently individuals can utilize their working memory (cf. Turner & Engle, 1989). Participants who had visualized a demanding person had higher operation spans when they were action-oriented than when they were state-oriented. No similar effects were found among participants who had visualized an accepting person.

Affective Disengagement. Affective disengagement refers to the task of downregulating unwanted feelings. Are action-oriented individuals indeed more efficient at affective disengagement than state-oriented individuals? The available evidence suggests an affirmative answer to this question.

One relevant study revealed that action- but not state-oriented college students display increments in positive affect and energy over the course of a semester (Brunstein, 2001). Additional research suggests that action-oriented individuals improve their affective states especially during aversive experiences. Specifically, action- compared to state-oriented individuals report higher personal well-being (Baumann et al., 2005) and less depression (Bossong, 1998) during stressful life periods. Recently, Koole and Jostmann (2004) showed that action-oriented individuals regulate their affective states on an intuitive level that may not rely on conscious

awareness. Specifically, action-oriented individuals under high demands were faster to provide positive responses to negative target words in an affective Simon task (cf. De Houwer & Eelen, 1998). Moreover, action- compared to state-oriented individuals under high demands were faster to detect happy faces in crowds of angry faces in a face-discrimination task (cf. Öhman, Lundqvist, & Esteves, 2001).

In a further demonstration of affective disengagement (Jostmann, Koole, Van der Wulp, & Fockenberg, 2005), participants were first subliminally primed with angry, neutral, or happy faces, after which their affective responses were measured. State-oriented individuals' affective reactions were congruent with the affective valence of the subliminal prime. When state-oriented individuals were primed with angry faces, they gave more negative affective reactions than when they were primed with neutral of happy faces. By contrast, action-oriented individuals' affective reactions were not congruent with the subliminal prime. Importantly, among participants who were primed with angry faces, those with an action orientation displayed less negative affective responses than those with a state orientation. In sum, these findings reveal greater affective disengagement among action- compared to state-oriented individuals even when affect is triggered outside conscious awareness.

Motivational Disengagement. Motivational disengagement refers to the rejection of explicit goals that are not in line with one's implicit motives. According to our theoretical analysis, action-oriented individuals should be more efficient at motivational disengagement than their state-oriented counterparts, particularly under high demands. In one relevant study (Brunstein, 2001), action- compared to state-oriented individuals were more likely to commit themselves to explicit goals that were congruent with their implicit motives as measured by a projective technique similar to the Thematic Apperception Test (cf. Murray, 1943). In an experimental investigation,

forming explicit self-control goals was associated with greater accessibility of motivational preferences in a subsequent free-choice task among action- compared to state-oriented individuals (Baumann & Kuhl, 2005). In a different investigation, Baumann and colleagues (2005) measured individuals' explicit achievement goals and individuals' implicit achievement motives. Among individuals who reported that their current lives were very demanding, action-oriented individuals displayed higher congruence between explicit achievement goals and implicit achievement motives than state-oriented individuals. Such differences were absent among individuals who reported less demanding lives.

Behavioral Disengagement. Behavioral disengagement refers to the ability to switch to new activities at appropriate moments. Are action-oriented individuals better at behavioral disengagement than state-oriented individuals? In one relevant investigation, high demands led action-oriented individuals to switch more easily from an unattractive to a more attractive activity (Kuhl & Beckmann, 1994b). In a different study, action- compared to state-oriented individuals under high demands were more likely to change directions in a motor movement task (Dibbelt, 1997). Moreover, action-oriented individuals were found better able to let go of goals that are related to unhealthy or dangerous behavior (e.g., Palfai, McNally, & Roy, 2002).

In a further test of behavioral disengagement processes (Jostmann & Koole, in press, Study 1), a group of action- versus state-oriented individuals first worked on an operation span task and then had to switch to a Stroop color naming task. Performance on the operation span task is energy depleting and thus becomes increasingly demanding. Because demands were thus still low at the beginning of the task, action- and state-oriented participants displayed similar operation spans. However, when participants had to switch to the Stroop task during the second part of the investigation,

performance differences emerged such that Stroop performance was better among action- compared to state-oriented participants. The performance decrements among state- compared to action-oriented participants can be explained by state-oriented individuals' difficulty after sustained task engagement to disengage from the operation span task and switch to the Stroop task.

In a follow-up study (Jostmann & Koole, in press, Study 2), participants did not need to switch between tasks but performed one extended version of the Stroop task. Akin to the operation span task, performing the Stroop task depletes resources. Accordingly, demands are lower at the beginning of the task compared to later phases of the task. During early phases of the Stroop task, state- and action-oriented individuals performed similarly well. However, during later phases of the task, performance among action-oriented individuals was much better than performance among state-oriented individuals. Accordingly, under high demands, action- compared to state-oriented individuals were better able to persist on the task when it was not possible to switch to a different task. Taken together, the two studies (Jostmann & Koole, in press) suggest that, under high demands, having an action orientation rather than a state orientation facilitates disengagement if people have to switch to a new task, but also facilitates persistence if switching is not possible.

Goal Disengagement under Threat

High threat occurs when individuals have to pursue their goals in the face of setbacks, uncertainty, or negative affect. In the literature on action versus state orientation, threat has been operationalized in various ways, for instance, as repeated failure (Kuhl, 1981), negative mood (Baumann & Kuhl, 2003), or mortality salience (Koole & Van den Berg, 2005). Throughout these various operationalizations, threat-related action orientation (AOT) emerged consistently as a moderator of goal

disengagement processes. In this section, we review relevant research findings on the AOT facet of action orientation.

Cognitive Disengagement. Some of the earliest studies on AOT found evidence that action- compared to state-oriented individuals are less likely to report ruminative thinking about the causes of past failures or the potential aversive consequences of future failures (Kuhl, 1981). This findings has since then been replicated in several other experiments (e.g., Baumann & Kuhl, 2003; Brunstein & Olbrich, 1985). Using a response-time measure, Koole and Van den Berg (2005) found that action-oriented individuals were better able to suppress death thoughts in a threatening environment than state-oriented individuals. Taken together, it appears that action-oriented individuals are more efficient at cognitive disengagement than state-oriented individuals.

Affective Disengagement. Repeated experimentally induced failure experiences led action-oriented individuals to report less negative affect and self-blame than state-oriented individuals. Moreover, stressful life-events were found to have more aversive effects on depression among state- compared to action-oriented individuals (Rholes, Michas, & Shroff, 1989). Action compared to state orientation is further associated with lower incidence of psychosomatic symptoms during stressful live events (Baumann et al., 2005), and greater therapeutic success during the treatment of phobia (Schulte, Hartung, & Wilke, 1997). In addition, among hospitalized patients, those with an action orientation reported less subjective pain, lower use of pain-killers and reduced fear after surgery than patients with a state orientation (Kuhl, 1983). Finally, a recent investigation found that action- compared to state-oriented individuals' recovered faster from a negative encounter with their relationship partner as indicated by better mood

and higher self-reported satisfaction with their relationships (Karremans, Finkenauer, & Jostmann, 2008).

Motivational Disengagement. One investigation revealed that state- but not action-oriented individuals lose access to their emotional preferences during phases of negative affect (Guevara, 1994). Moreover, state- compared to action-oriented individuals are more likely to misperceive externally assigned goals as self-chosen. Notably, differences between action- and state-oriented individuals in false self-ascription of assigned goals were found especially after the induction of negative affect (Baumann & Kuhl, 2003). Finally, during threatening life-events, action- compared to state-oriented individuals were found to display more coherence between explicit achievement goals and implicit achievement motives (Baumann et al., 2005).

Behavioral Disengagement. In an early investigation, Kuhl (1981) exposed action- and state-oriented participants to uncontrollable failure during a training task. Subsequently, participants were to switch to an unrelated activity. Action- compared to state-oriented individuals were better able to disengage from the training task as indicated by improved performance on the second task. In line with a functional perspective, better performance among action- compared to state-oriented individuals was not related to participants' expectancies regarding the attainability of the second task.

A more recent investigation examined disengagement from failure experiences on the level of single trials during a modified flanker task. When participants expected to be rewarded for correct responses, those with an action orientation were more accurate than those with a state orientation on trials that followed an incorrect response (De Lange & Van Knippenberg, 2007). Finally, a recent study demonstrated that among participants who missed an initial attractive action opportunity (e.g., getting a low

priced bargain), those with an action orientation were less likely than those with a state orientation to also miss a similar but somewhat less attractive action opportunity, as indicated by the inaction-inertia effect (Van Putten, Zeelenberg, & Van Dijk, 2007). Taken together, these studies reveal that action-oriented individuals are better able to disengage from a failing course of action and initiate new courses of action.

Summary, Discussion, and Implications

In the present chapter, we have suggested that unexpected difficulties during goal pursuit leave people with a fundamental goal dilemma whether they should hang on to their goal or let it go. From an expectancy-value perspective, the dilemma is solved on the basis of people's beliefs regarding the costs and benefits of further persistence versus disengagement. If people perceive the goal as less valuable than alternative goals, or if they expect that the goal has become unattainable, they are more likely to disengage from a failing goal compared to situations in which the goal's perceived value or people's success expectancies remain high. One limitation of the expectancy-value approach is, however, that it fails to explain why people's beliefs (e.g., the goal is unattainable) sometimes do not lead to corresponding behavior (e.g., disengagement). We have therefore advanced a functional perspective on the basic cognitive and affective processes that are involved during goal disengagement.

According to our functional perspective, unexpected difficulties during goal pursuit activate explicit goal representations in working memory. Because goals possess the property of self-sustained activation, they remain activated until their completion. In the case of unattainable goals, self-sustained activation leads to uncontrollable intrusions and unwanted feelings that strain the limited capacity of working memory and deplete energy resources. We have termed situations demanding, when people face difficulties with goals that they ideally like to attain, and experience

decreased positive affect. By contrast, we have termed situations threatening when people face difficulties with goals that they ought to attain, and experience increased negative affect (cf. Carver & Scheier, 2005; Higgins, 1987).

To disengage from unattainable goals during demand or threat, people have to update their working memory such that information related to the unattainable goal becomes erased and information to new and potentially attainable goals can be processed (cf. Braver & Cohen, 2000). During updating, information in working memory becomes aligned with current perceptual information about the external environment and internal states and with information regarding people's implicit motivational preferences. Based on recent insights on human action control (Kuhl, 1984, 2000), we have suggested that updating relates to the facilitation of the cognitive pathway between working memory on the one hand and perceptual systems (i.e., intuitive behavior control, IBC) and motivational systems (i.e., extension memory) on the other hand. Information flow between working memory and IBC is facilitated by increased positive affect, whereas information flow between working memory and extension memory is facilitated by decreased negative affect.

We have further suggested that the updating of working memory is facilitated by action orientation compared to state orientation. Following Kuhl (1984, 1994), we distinguish two dimensions of action versus state orientation. Individuals who are action-oriented on the threat-related dimension (AOT) are likely better able to disengage from unattainable goals during threatening situations compared to their state-oriented counterparts. Moreover, individuals who are action-oriented on the demand-related dimension (AOD) are likely better able to disengage from unattainable goals during demanding situations compared to their state-oriented counterparts.

Goal disengagement is reflected by the workings of the individual cognitive-affective systems but also by the interaction of the systems. Accordingly, the overall phenomenon of goal disengagement can be decomposed into cognitive disengagement, affective disengagement, motivational disengagement, and behavioral disengagement. A literature review revealed that action- compared to state-oriented individuals during high demands and threat display greater disengagement on the cognitive, affective, motivational, and the behavioral levels. Importantly, action-oriented individuals do not invariably disengage from goals. Instead, action-oriented individuals have been found to disengage only from goals that cannot longer be pursued, but to persist on goals if switching to new tasks is not possible (Jostmann & Koole, in press). Taken together, empirical evidence confirms that action compared to state orientation is an important moderator of disengagement from unattainable goals during demand or threat.

Whereas classic analyses have emphasized the value of goals and people's confidence in their attainability, the functional perspective examines the affective-cognitive processes that facilitate the cessation of goal activation in working memory. Nevertheless, the functional perspective can be integrated with classic perspectives. For instance, the functional perspective can be related with the well-established finding that people respond to difficulties with increasing effort until their confidence in successful task completion falls below a critical level (Brehm & Self, 1989). However, if goal attainment is highly important people may continue investing even extreme levels of effort in spite of low confidence. Such extreme persistence can move people into a zone of "hysteresis" during which minor setbacks can lead to abrupt and potentially catastrophic switches from persistence to disengagement (Carver & Scheier, 2005).

Based on our functional perspective, we suggest that action-oriented individuals enter hysteresis under different conditions than state-oriented individuals. Action-

oriented individuals are more likely to display extreme persistence when the current goal is in line with their implicit motives. When high goal importance is due to pressure that comes from outside the self (e.g., social pressure, time pressure etc.), action-oriented individuals are more likely to devaluate the importance of their goals and, consequently, disengage earlier and therefore less abruptly from their goals compared to state-oriented individuals. By contrast, when goal importance is strongly supported by people's implicit motives, alignment of current goals under threat or demand among action-oriented individuals may reconfirm the high importance of a goal thereby making them even more likely candidates for hysteresis than state-oriented individuals.

The present functional analysis can further inform life-span perspectives on goal disengagement (e.g., Schulz & Heckhausen, 1996). Past research has found that goal disengagement becomes more important during later life periods as indicated by an age-related shift from "assimilative" coping strategies (e.g., tenacious goal pursuit in the face of difficulties) toward "accommodative" strategies (e.g., flexible goal adjustment; Brandtstädter & Rothermund, 2002). We suggest that such a shift is facilitated by action compared to state orientation. In line with this assumption, people have been found to become more action-oriented during later life phases (Gröpel et al., in press). Future research may explore, whether such age-related increases in action orientation actually facilitate successful accommodation to aging.

Conclusion

Like Sisyphus, many people sometimes end up on a mission impossible. Fortunately, unlike this tragic hero, people have the possibility to disengage from their unattainable goals. Previous research has emphasized the importance of people's beliefs regarding the costs and benefits of further persistence versus disengagement. Our functional analysis extends this view by considering the role of sustained goal

activation in working memory. Moreover, we have reviewed evidence that action- compared to state-oriented individuals are better able to update their working memory and hence terminate the activation of unattainable goals. As for Sisyphus, his tragedy might have been that he lacked action orientation, which led him to persevere even when this was futile.

Footnotes

1. To simplify the present discussion, our definition of working memory subsumes characteristics of intention memory and object recognition systems (cf. Kuhl, 2000).

2. The labels “demand-related” and “threat-related” action versus state orientation were suggested by Koole and Jostmann (2004) to replace the original “decision-related” and “failure-related” action versus state orientation, respectively (Kuhl, 1994). The new labels fit better with relevant concepts in action control theory (cf. Baumann et al., 2005).

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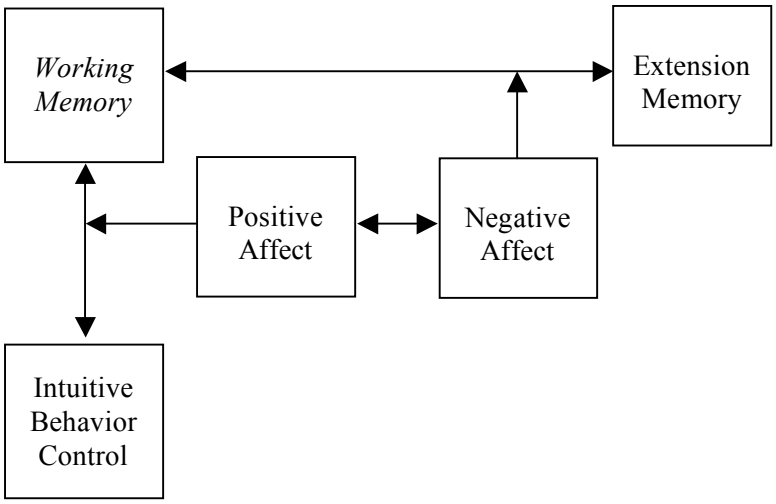

Figure 1. A Model of Working Memory Updating (Adapted from action control theory; Kuhl, 2000. Labels in *Italics* deviate from original connotations.)

Table 1

Example Items of the Demand-Related Subscale (AOD) and the Threat-Related Subscale (AOT) of the ACS-90 (Kuhl, 1994; Action-Oriented Responses are Marked with an Asterisk)

Items of the AOD subscale:
When I know I must finish something soon: A. I have to push myself to get started* B. I find it easy to get it done and over with
When I have a lot of important things to do and they must all be done soon: A. I often don't know where to begin B. I find it easy to make a plan and stick with it*
Items of the AOT subscale:
When I have lost something that is very valuable to me and I can't find it anywhere: A. I have a hard time concentrating on anything else B. I put it out of my mind after a little while*
When I am being told that my work is completely unsatisfactory: A. I don't let it bother me for too long* B. I feel paralyzed