

**On the Hidden Benefits of State Orientation:
Can People Prosper without Efficient Affect Regulation Skills?**

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Draft: November 9, 2003

11.770 words

To appear in: A. Tesser, J. Woods, & D. A. Stapel (Eds.),
Psychological Perspectives on the Self.

RUNNING HEAD: Hidden Benefits of State Orientation

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Can People Prosper without Efficient Affect Regulation Skills?

Personal mastery over one's emotional life is a highly valued psychological commodity. Hollywood films glorify men and women who manage to heroically overcome their worst fears and frustrations. Religious doctrines proclaim the importance of achieving inner peace amidst worldly turmoil. In addition to all this, an army of self-help books, TV shows, and websites advertise such virtues as positive thinking, self-efficacy, and emotional intelligence. Although popular claims about the benefits of affect regulation are probably exaggerated, empirical research has confirmed that efficient affect regulation is vital to several key aspects of human functioning (Gross, 2002; Kuhl & Koole, in press). For instance, successful affect regulation has been found to foster emotional well-being (Baumann, Kaschel & Kuhl, 2003a), positive interpersonal relations (Butler et al., 2003), and goal achievement (Kuhl, 1981). Based on these and similar findings, some authors have argued that affect regulation skills may be even more important than IQ in terms of promoting beneficial outcomes for the individual and society at large (Goleman, 1995).

Despite the well-known benefits of efficient affect regulation, people are not always successful at keeping their feelings in check. Virtually everyone occasionally experiences feelings that are very difficult to control, such as a raging bout of anger, an immobilizing episode of depression, or overwhelming anxiety. However, some people are especially prone to become flooded by uncontrollable feelings (Kuhl & Beckmann, 1994a; Pyszczynski & Greenberg, 1987). The latter group of people may become virtually immobilized by their feelings of depression, anxiety, self-doubt, or other aversive emotions. Because own affective states seem to dominate the functioning of these individuals, we refer to them as "state-oriented" individuals (Kuhl, 1981). Based on people's self-reports, up to 50% of the normal, non-clinical population in Western countries may be predisposed towards state orientation (Koole, 2003; Kuhl, 1994). State orientation thus appears to be a very common psychological

condition. The widespread prevalence of state orientation challenges prevailing notions about the importance of efficient affect regulation. Why do so many people regularly allow their feelings to go out of control? Does state orientation always signify maladaptive coping? Or is it conceivable that state orientation has some psychological advantages?

In the present chapter, we propose that state orientation, defined as the inability to exert volitional control over one's feelings¹, has both psychological costs AND benefits. Because of modern society's emphasis on personal efficacy and control, the benefits of state orientation are easily overlooked. Accordingly, our goal in this chapter is to present a theoretical analysis that identifies some of the tradeoffs that are involved in state-oriented coping. In the next paragraphs, we begin by taking a closer look at what it means to be state-oriented. After that, we review some arguments for believing that state orientation can sometimes be adaptive, and discuss potential ways in which state orientation may lead to favorable outcomes. Finally, we consider some of the broader implications of the hidden benefits of state orientation for the theoretical understanding of affect regulation and volitional action control.

Action versus State Orientation

The notion of state orientation was first introduced during the early 1980s, in a series of studies that sought to integrate the literatures on achievement motivation and learned helplessness. In learned helplessness research, participants are first subjected to a series of uncontrollable failures on a training task, after which their performance on a test task is tested. The usual finding is that uncontrollable failure during training leads to performance drops during the test task (e.g., Hiroto & Seligman, 1975; Maier & Seligman, 1976). Initially, these findings were taken to mean that causal attributions of uncontrollability induce low generalized expectations of success. Based on expectancy-value theories of motivation,

generalized low expectations of success should lead to generalized motivation losses, and hence, low performance on the test task.

However, subsequent research revealed that uncontrollable failure reliably leads to reduced perceptions of controllability on the training task, but not on the test task. Even in the complete absence of reduced perceptions of controllability on the test task, uncontrollable failure can still induce performance drops on the test task (Kuhl, 1981). As such, learned helplessness effects may occur even when people's motivation to perform well has remained fully intact. According to Kuhl (1981), this seemingly paradoxical phenomenon is due to people's tendency to ruminate about their own states after failure, a condition that was labeled as *state orientation*. The notion of state orientation was contrasted with *action orientation*, which was defined initially by Action Control Theory (Kuhl, 1981, 1984) as a focus on task-relevant cognitions. Because state-oriented ruminations occupy people's cognitive resources, state orientation may undermine performance during subsequent tasks. Consistent with this, state-oriented individuals are disproportionately vulnerable to the performance-undermining effects of uncontrollable failure (Brunstein & Olbrich, 1985; Kuhl, 1981). By contrast, action-oriented individuals display hardly any evidence of learned helplessness effects.

Subsequent work has identified volitional affect regulation as the main underlying mechanism in which action-oriented individuals differ from state-oriented individuals (Kuhl, 2000; Koole & Jostmann, 2003). Action-oriented individuals are capable of self-regulating aversive affect in a highly efficient manner, which enables them to pursue their goals in a self-determined, unhesitating manner. By contrast, state-oriented individuals are unable to exert volitional control over aversive affect. Personality Systems Interactions (PSI) theory (Kuhl, 2000; Kuhl & Koole, in press) spells out in more detail how affect regulation influences volitional action control. PSI theory assumes that volitional action depends on the

coordinated interplay between self-regulatory functions. The coordination of these *personality systems interactions* is achieved through affective changes. That is, changes in positive or negative affect are assumed to channel the person's self-regulatory resources towards particular psychological systems. Accordingly, volitional control of one's own affective states plays a vital role in the volitional regulation of action. The postulated connection between affect regulation and action control fits with everyday observations that strong-willed individuals are able to tolerate many frustrations and overcome many threats in order to achieve their goals.

PSI theory further distinguishes between coping with negative affect and coping with inhibited positive affect. Inhibited positive affect occurs when people are unable to obtain desired positive outcomes. For instance, an employee might be forced to cancel a date with a romantic interest because his employer requires him to work overtime. PSI theory refers to inhibited positive affect as *frustration*. When positive affect becomes frustrated, people will become more inclined to engage in analytic problem solving efforts and to formulate explicit plans in order to restore the flow of positive outcomes. For instance, the employee from our example might resolve to buy concert tickets for his dating partner, in order to make things up with her. The psychological system that supports such planning is referred to as *intention memory*.

Once intention memory has formulated an appropriate intention, it becomes necessary to put it into action. PSI theory assumes that the implementation of an intention is greatly facilitated by the *intuitive behavior programs*, low-level action schemas that specify which concrete action steps are required to execute the intention. For instance, our lovesick employee needs to remember to take enough cash with him the next day, to make an extra stop on the way to work to buy the tickets, he needs to call up his date, etc. In order to access such intuitive behavior programs, PSI theory assumes that people need to restore the positive

affect that became inhibited with the activation of intention memory (Kuhl & Kazén, 1999). Individuals who are unable to restore positive affect after frustration may thus be kept from initiating an intended action, even when the intention is highly accessible. This first form of state orientation is hence called *hesitation*.

Increases in negative affect arise when individuals are exposed to threatening or unexpected events. For instance, our ambitious employee is likely to experience negative if his boss threatens to sack him if he refuses to work overtime. PSI theory argues that people find it increasingly difficult to follow their own emotional preferences and intuitions when negative affect is raised. This is because high levels of negative affect lead to inhibition of *extension memory*. Extension memory is a central executive system that operates according to parallel processing principles (Nowak, Vallacher, Tesser, & Borkowski, 2000). Because extension memory is a parallel processing system, it is capable of integrating many self-representations, emotional preferences, and autobiographical knowledge into a coherent course of action (Baumann & Kuhl, 2002). The functional basis for extension memory is provided by prefrontal networks in the right hemisphere. The organization of the right hemisphere is much like a global network that integrates information from a vast variety of input systems. As such, the right hemisphere is ideally suited for integrative information processing (Beeman et al., 1994; Rotenberg, 1993). The cognitive structures of extension memory are too extended to be completely accessible to conscious experience. Nevertheless, extension memory activation has some experiential correlates, which include feelings of freedom (Yalom, 1980), mastery (Dweck, 1986), and self-determination (Deci & Ryan, 2000).

As long as individuals maintain access to extension memory, they have an intuitive sense of what they want, what is most meaningful to them, and why they do the things they do. For instance, our employee might sense intuitively that his date is more important to him

than his low-paying job, and therefore tell his boss that he refuses to work overtime on this particular evening. Conversely, individuals who lose access to extension memory will be inclined to experience feelings of alienation, internal conflict, and disorientation. In this case, our intimidated employee might comply with his boss and work overtime, ruminating all the while on how this would cost him a wonderful night out with his love. According to PSI theory, individuals who cannot down-regulate negative affect are likely to experience inhibited access to extension memory. This second form of state orientation is called *preoccupation*, because it is often accompanied by negative ruminations and inner conflict.

As a preferred coping style, people's action versus state orientation may vary from situation to situation or as a function of more stable individual differences. Under extreme stress, almost everyone is bound to become state-oriented. This is because extreme amounts of stress may exceed even the affect regulation capacity of chronically action-oriented individuals. Under more moderate conditions, however, individual differences in action versus state orientation are likely to emerge. Because chronic state orientation provides a greater puzzle to affect regulation theories than temporary state orientation, the present chapter will mainly focus on individual differences in state orientation. Kuhl (1981; 1994) and associates have developed a self-report instrument to measure individual differences in action versus state orientation, the ACS90. Illustrative items of the ACS90 are presented in Table 1.

In line with PSI theory, the ACS90 distinguishes between *preoccupation*, which relates to coping with high negative affect, and *hesitation*, which relates to coping with inhibited positive affect. Each item of the ACS90 presents individuals with a description of a stressful situation and two different ways of responding to the situation, an action- or a state-oriented response. Individuals are asked to choose which response is most characteristic of them. The number of times that an individual chooses a state-oriented response is taken as an

indicator of the individual's level of state orientation (alternatively, responses on the ACS90 are often coded in the action-oriented direction). Notably, the ACS90 does not ask participants to provide introspective judgments of their affect regulation skills, but rather asks participants to report on the consequences that these skills have for their behavior. Accordingly, the ACS90 may also tap into affect regulation mechanisms that are inaccessible to introspection, but whose impact can nonetheless be observed in one's overt behavior.

Individual differences in action-versus state-orientation appear fairly stable over time. For instance, a recent study among 56 Dutch undergraduates found a test-rest reliability of .78 for hesitation and .68 for preoccupation (both $ps < .001$) over a six-month period (Jostmann, 2003). Research among German participants has found similar stabilities across periods from 3 to 12 months (Kuhl & Beckmann, 1994a). Moreover, state orientation appears to be a commonly occurring coping response. In a study of 1,357 Dutch university students, Koole (2003) found that 57.9% of scored above the conceptual midpoint of the preoccupation scale, whereas 49.7% scored above the conceptual midpoint of the hesitation scale. Around half of this non-clinical sample could thus be characterized as predominantly state-oriented. Considering that action orientation is probably more socially desirable than state orientation in an independent culture such as the Netherlands, these self-reports might well underestimate the true prevalence of state orientation.

In line with PSI theory, preoccupation and hesitation have emerged as separate factors in factor-analytic studies (Diefendorff et al., 2000; Kuhl, 1994) and have differential effects that are elicited by different manipulations (e.g., Koole, in press). Unique effects of preoccupation have emerged in response to self-threatening conditions, such as repeated failure (Kuhl, 1981), physical pain (Kuhl, 1983), and mortality salience (Baumann & Kazén, 2003; Koole & Van den Berg, in press). Unique effects of hesitation have emerged in response to demanding conditions, such as performance-contingent rewards (Koole, in press),

time pressure (Stiensmeier-Pelster, John, Stulik, & Schürmann, 1991), and uncompleted intentions (Goschke & Kuhl, 1993). However, preoccupation and hesitation are often positively correlated, and sometimes yield similar effects under similar circumstances. The empirical convergence between preoccupation and hesitation probably reflects the natural confounding between high negative and low positive affect, which are often triggered by identical conditions. Moreover, when socialization conditions involve high negative affect and low positive affect, a conditioned connection between preoccupation and hesitation may develop (e. g. when parents habitually respond to a child's anxiety with demands or to a child's frustration with fear-arousing communication). Because of this natural confounding and because preoccupation and hesitation both refer to affect regulation skills, it is often meaningful to talk about state- and action-oriented individuals in general, irrespective of the more fine-grained distinction between preoccupation and hesitation.

To date, more than 40 published studies have found theoretically predicted effects of action versus state orientation (for reviews, see Diefendorff, Hall, Lord, & Streat, 2000; Kuhl, in press; Kuhl & Beckmann, 1994a). Effects of action orientation have been obtained across a wide range of different measures and domains, including intention memory, physiological arousal, medicine intake, therapeutic outcomes, athletic performance, and work psychology. Moreover, the effects of action orientation are not due to achievement motivation (Heckhausen & Strang, 1988), self-esteem (Koole & Jostmann, 2003), or suppression and reappraisal strategies (Koole in press), and occur over and above the effects of the "Big Five" personality dimensions (Baumann & Kuhl, 2002; Diefendorff et al., 2000; Palfai, 2002).

Theoretically, the effects of action versus state orientation can be grouped into five categories. First, stress leads state-oriented individuals to experience perseverating negative affect and/or decreases in positive affect (Brunstein & Olbrich, 1985; Rholes, Michas, &

Shroff, 1989). Second, stress interferes with the execution of complex tasks among state-oriented individuals (Kuhl, 1981; Heckhausen & Strang, 1988), even though state-oriented individuals (particularly those high on hesitation) are capable of maintaining complex intentions in working memory (Goschke & Kuhl, 1993). Third, stress disrupts complex forms of intuition (e.g., judging the coherence of complex stimuli) among state-oriented individuals, particularly those high in preoccupation (Baumann & Kuhl, 2002). Fourth, stress inhibits cognitive access to emotional preferences and implicit self-representations among state-oriented individuals (Baumann & Kuhl, 2003; Koole, in press). Fifth, state-oriented individuals' have an increased risk of developing psychological symptoms (Baumann, Kaschel & Kuhl, 2003a; Kuhl & Helle, 1986) and personality disorders (Baumann, Kaschel & Kuhl, 2003b).

Across all the aforementioned domains, the disruptive effects of stress are largely absent among action-oriented individuals. Indeed, action-oriented individuals frequently show enhanced functioning under stress (Koole & Jostmann, 2003; Jostmann & Koole, 2003). Taken together, research indicates that state-oriented individuals are indeed less skilled affect regulators than action-oriented individuals, and that as a result, state-oriented individuals experience various self-regulatory problems under stress.

Is State Orientation Self-Destructive?

So far, our discussion has come up with little to suggest that state orientation can ever be adaptive. Even many state-oriented individuals themselves seem to question the merits of their habitual coping style, judging by the popularity of self-help books and therapies that aim to boost the efficiency of people's affect regulation skills. Does it make sense, then, to be looking for possible benefits of state orientation? Isn't state orientation a purely self-destructive coping strategy?

In addressing these issues, it is noteworthy that state orientation is a rather malleable personality trait. In particular, Kästle (1988) examined individual differences in extraversion, neuroticism, and state orientation among mono- and dizygotic twins. Replicating previous studies (Jang, Liveley & Vernon, 1996), extraversion and neuroticism were more similar among monozygotic twins than among dizygotic twins. State orientation, however, was no more similar among monozygotic than among dizygotic twins. The genetic component in state orientation may thus be relatively modest. This conclusion fits with PSI theory, which argues that the development of state orientation is strongly influenced by socialization experiences (Kuhl, 2000, 2001). Specifically, PSI theory posits that responsiveness to an infant's emotional expressions will foster action orientation, whereas neglecting or even punishing these expressions will promote state orientation (Kuhl, 2000). Developmental research supports this line of reasoning (Keller & Gauda, 1987; Volling, McElwain, Notaro, & Herrera, 2002). Notably, the person's action versus state orientation may also change later in life, for instance, through therapy (Kaschel & Kuhl, 2004; Schulte, Hartung, & Wilke, 1997).

The malleability of state orientation provides a first indication that state orientation may evolve as a psychological adaptation to the environment. A further indication is the common prevalence of state orientation. As already noted, around 50% of a sample of 1,357 Dutch university students had state orientation scores above the conceptual midpoint of the ACS90 (Koole, 2003). Moreover, merely 4.6% of the sample reported not a single state-oriented response on the hesitation subscale, and a mere 2.8% reported not a single state-oriented response on the preoccupation subscale. Thus, even individuals who are relatively action-oriented may still display state-oriented coping responses now and then. If state orientation is a purely self-defeating coping style, then this self-defeating tendency is remarkably widespread. Some years ago, Baumeister and Scher (1988) concluded that

normally functioning individuals rarely engage in purely self-defeating behaviors. Indeed, most seemingly self-defeating behaviors were either not experienced as such by the individuals themselves, based on erroneous beliefs about the consequences of these behaviors, or involved some kind of tradeoff between costs and benefits. It seems worthwhile to see in how far these three explanations are applicable to state orientation.

First, state-oriented individuals might interpret their coping behavior much differently than outside observers. An analogy may be drawn here with masochism. Masochistic individuals engage in a wide variety of painful and self-degrading actions. These actions, however, apparently provide a sense of deep satisfaction to the masochists themselves (Baumeister, 1991). To the masochist, therefore, masochism is anything but self-defeating. Is state orientation like masochism, painful to behold but gratifying from within? The evidence suggests something different. As already noted, state-oriented individuals typically report lower levels of positive affect and higher levels of negative affect than action-oriented individuals. This affective contrast becomes even further enhanced under stressful circumstances (Rholes et al., 1989). Importantly, these self-reports are backed by evidence from implicit measures (Koole & Jostmann, 2003) and physiological responses (Heckhausen & Strang, 1988; Rosahl et al., 1993). Overall, it seems fair to say that state-oriented individuals are as much bothered by their affect regulation difficulties as an outside observer might suspect.

Misinformation is another common cause of self-defeating behavior (Baumeister & Scher, 1988). Thus, state-oriented individuals might engage in maladaptive coping practices because they espouse erroneous beliefs about the coping process. One possibility is that state-oriented individuals have somehow remained oblivious of the benefits of efficient affect regulation. This seems rather unlikely, however, as the advantages of affect regulation are widely acclaimed and publicized throughout society. Alternatively, state-oriented individuals

might mistakenly believe that they are unable to control their feelings, and consequently give up prematurely on their affect regulation efforts. However, this account is contradicted by evidence that state-oriented individuals often frantically try to control their feelings when they are besieged by negative affect (Kuhl, 1981; Brunstein & Olbrich, 1985). Moreover, state orientation is moderately positively correlated with chronic tendencies towards emotion suppression (Koole, in press). Although emotion suppression tends to be an ineffective strategy (Gross & John, 2003), this finding suggests that many state-oriented individuals are actively trying to control their feelings. The available evidence therefore indicates that the state-oriented individuals are not simply misinformed about the inefficiency of their affect regulation practices. Rather, it appears that state-oriented individuals are lacking in some of the basic *skills* that are necessary in getting a grip on their feelings.

If the trouble with state oriented individuals does not arise from their perverted tastes or misinformed beliefs, then perhaps state orientation involves some kind of tradeoff. The costs of having inefficient affect regulation skills have by now become fairly obvious. But what about the benefits of inefficient affect regulation skills? From the present perspective, we can distinguish at least three ways in which state orientation may be beneficial. First, it is notable that the functional deficits of state orientation emerge primarily under acute stress. Under more friendly conditions, then, state-oriented individuals may be able to function quite well and even do better than their action-oriented counterparts. Second, state orientation might have certain functional benefits under stress. In particular, the tendency towards hesitation may prevent state-oriented individuals from engaging in premature action, whereas preoccupation with negative ruminations might sensitize state-oriented individuals to potential threats. Finally, even when state orientation does not benefit the individual him- or herself, state orientation might have some important benefits to the social environment. In the following paragraphs, we will explore these three potential benefits of state orientation -

benefits through external support, benefits through regression, and social benefits- in more detail.

Benefits Through External Support

As the Beatles observed some time ago, a little help from one's friends can make it ever so much easier to get by. Partners, friends, and other sympathetic individuals can help us in a variety of ways, which range from simply keeping us company, to listening to our grievances or giving a big hug. Research indicates that social support is remarkably effective in alleviating acute stress, both at psychological and physiological levels (Mikulincer & Florian, 2002; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Accordingly, obtaining affective support from close others may help state-oriented individuals to do well even without the ability to self-regulate their own affective states.

Because state-oriented individuals stand much to gain from external support, they may be especially open to relationships with supportive others. Indeed, a recent study found that state-oriented individuals have a greater preference for “symbiotic” relationships than action-oriented individuals (Gunsch, 1996). In a symbiotic relationship, one partner helps and supports the other partner in overcoming his or her personal problems and frustrations. Symbiotic relationships entail major advantages for state-oriented individuals, because such relationships may function as a “niche” (Tesser, 2001) in which state-oriented individuals can obtain the emotional comforting that they are unable to attain by themselves. Action-oriented individuals may often do without symbiotic relationships, because they can rely on their own affect regulation resources. Thus, it seems particularly adaptive for state-oriented individuals to strive for symbiotic relationships.

State orientation may be even associated with a special ability to obtain social support because people are usually motivated to help when somebody is open about his or her emotional state. This help-seeking behavior is not necessarily tantamount to social

exploitation as some extreme clinical examples may suggest (Berne, 1981). People who offer support may take advantage of typical contributions of state-oriented partners, for example, their sensitivity for potential risks (as a remedy for excessive optimism), their sensitivity for their own and others' feelings (as a remedy for emotional insensitivity that sometimes characterizes very active people), or their willingness to give in which may form a good basis for relationships with rather self-assertive partners. Because symbiotic relationships are desired for instrumental reasons (e.g., other's ever-cheerful disposition) rather than reasons that are intrinsic to the relationship (i.e., other's unique personality), symbiotic relationships might not always have the same quality as more authentic relationships (Schülein, 1989). However, more optimistic scenario's are also feasible. For instance, a symbiotic relationship might deepen when the person feels secure enough to engage in a more personal interchange.

In independent cultures, which emphasize self-reliance, symbiotic relationships may be typecast as being overly dependent or exploitative. By contrast, interdependent cultures, which emphasize mutual dependence, may be more open to the positive sides of affective dependency (Markus & Kitayama, 1998). In interdependent cultures, emotional autonomy may be regarded as an egocentric attempt to separate oneself from the rest of the social community whereas emotional dependency may be regarded as a sign of being connected with the social network. Moreover, an action-oriented individual's inability to accept and express states of helplessness or weakness can be disadvantageous even in independent cultures: A compulsive inclination to pretend being strong, cool and independent can hinder a person to receive support from others when in need. In addition, open expression of helplessness and weakness may even be a necessary condition for motivating social partners to provide the responsiveness that fosters the development of affect-regulatory skills in the long run (Kuhl, 2000)². Empirical findings (Lepore et al., 1996) confirm this expectation: Mothers who tried to cope with the their infants' death showed fewer depressive symptoms

18 month later when they went through a period of state-oriented rumination, provided they lived in unconstrained social relationships. Presumably, expressing one's sad state of mind signals to others that emotional support is needed and keeps them from expecting too much performance too early in the coping process (Herrmann & Wortman, 1985).

Beyond the longterm maintenance of social relations, state-oriented individuals may also seize more readily on affective support on a moment-to-moment basis. This mechanism was recently tested by Koole and Jostmann (2003). In this study, action- and state-oriented participants were asked to visualize either a relationship partner that was highly accepting of them or a partner who was very critical and demanding of them. Based on previous research, this manipulation was expected to trigger habitual relationship patterns among the participants (Baldwin & Sinclair, 1996). Before and after the visualization, participants reported on their moods. To the extent that state-oriented individuals are eager to "seize" on the cognitive accessibility of a supportive environment, they should display considerable mood improvements in an accepting relationship context, perhaps even more than action-oriented individuals.

The predicted pattern was indeed obtained by Koole and Jostmann (2003). Upon visualizing an accepting person, state-oriented participants displayed reliable decreases in depressive mood, which endured at least 10 minutes after the visualization. By contrast, action-oriented participants displayed no mood improvements after visualizing an accepting relationship. A very different pattern emerged when participants had visualized a demanding relationship: here action-oriented participants displayed strong decreases in depression, whereas state-oriented participants displayed an increase of depression. Manipulation checks indicated that action- and state-oriented participants had similar evaluations of the visualized relationships, indicating that the findings were caused by differences in responding to the visualization rather than differences in visualized contents. In sum, state-oriented individuals

seem more prepared to "seize" on positive affect that is generated by a supportive context than action-oriented individuals, who mainly seem to regulate their moods in a demanding context.

Affective support may also facilitate performance among state-oriented individuals in other self-regulation domains unrelated to mood. For instance, Baumann and Kuhl (2003) found that a positive mood manipulation caused state-oriented individuals to have fewer confusions between tasks that were assigned versus self-chosen. Accordingly, affective support may help state-oriented individuals to maintain cognitive access to their authentic self. Another recent study examined the effects of action versus state orientation on implicit self-evaluation (Koole, in press). To induce a supportive versus a threatening context, this study used the same visualization task that was described above. To assess implicit self-evaluation, the study used a validated reaction time measure (Hetts, Sakuma, & Pelham, 1999). As can be seen in Figure 1, state-oriented individuals activated implicit evaluations of the self as weak and dependent after a threat-related visualization, an effect that was not found among action-oriented individuals. By contrast, state-oriented individuals displayed inhibited implicit evaluations of the self as weak and dependent after an accepting visualization, an effect that was not displayed by action-oriented individuals. Thus, affective support enabled state-oriented individuals to ward off implicit feelings of self-doubt to a greater degree than action-oriented individuals..

According to PSI theory, affective support facilitates self-regulation because it permits individuals to access self-regulatory systems that otherwise become inhibited by aversive affect. Based on this logic, it may also be possible for the environment to activate relevant self-regulatory systems directly, without the mediation of the affective systems. For instance, preoccupation is characterized by inhibition of extension memory (i.e., high-level intuitions) and its associated implicit self-representations due to persistent negative affect.

This inhibition may be overcome either by removing negative affect or by directly priming extension memory. In line with this notion, Kuhl and Beckmann (1994b) found that the alienating effects of a monotonous task disappeared among state-oriented individuals when these individuals were provided with a meaningful interpretation of a rather monotonous task (monitoring a visual display which was explained to be important for controllers in an atomic power plant). Presumably, experiencing a task as meaningful prevented alienation because it encouraged state-oriented individuals to activate their self-system (i.e., extension memory). Access to extension memory may even be secured through non-conscious means. Koole and Coenen (2003) found that state-oriented individuals who were subliminally primed with self-related words remained creative even after performing a boring task, whereas state-oriented individuals who were subliminally primed with a neutral word became less creative after performing a boring task (action-oriented individuals were creative regardless of experimental condition). Taken together, the environment may facilitate state-oriented individuals either through affective support or by directly priming self-regulatory systems that have become inaccessible to state-oriented individuals.

Benefits Through Regression

External support can help state-oriented individuals to resolve many of their self-regulatory problems. However, it is unlikely that external support will always be available to all state-oriented individuals. Consequently, it seems inevitable that state-oriented individuals will at some point encounter stress without the backup of an external support system. Thus vulnerable and exposed, state-oriented individuals are bound to undergo the various phenomena that have been identified by previous research: persistent negative affect, uncontrollable ruminations, decreased performance at complex tasks, alienation, internal conflict, incoherent experience, reduced creativity, loss of autonomy, and so on. This side of

state orientation at first glance seems anything but adaptive. But before jumping to conclusions, let's consider *why* state orientation has these kinds of effects.

Under stress, state-oriented individuals go through a very diverse list of symptoms. It seems quite challenging to relate this whole list to a single underlying mechanism. Still, we would argue that state-oriented coping mechanisms hang together for a reason. When state-oriented individuals are attacked by acute stress, central executive processes appear to become dissociated from lower-level processes. Consequently, high-level goals and intentions can no longer guide the person's movements, leading to hesitation-related phenomena such as performance decreases and failure to enact one's goals. In a similar vein, high-level networks concerning self-knowledge and emotional preferences can no longer become integrated with new experiences, leading to preoccupation-related phenomena such as rumination and alienation. Stress thus causes state-oriented individuals to switch from a *top-down mode* of action control, in which high-level systems guide and direct the low-level processes that mediate the person's behavior, towards a *bottom-up mode* of action control, in which low-level processes determine behavior with little supervision of high-level systems³. This movement from top-down towards bottom-up action control can be understood as a psychological *regression* (Kuhl, 2001), during which more primitive or elementary behavior control systems take precedence over more sophisticated forms of action control. Because top-down action control is involved in the coordination of the complete range of a person's self-regulatory mechanisms, movement towards lower levels of action control can be expected to have diverse effects across many different subsystems. Regression may thus be the underlying theoretical mechanism that connects the remarkably diverse effects of action versus state orientation.

One of the first psychologists to recognize the importance of regression as a coping mechanism was Sigmund Freud (1938/1989), who observed that some of his clients seemed

to fall back on infantile behavior patterns. Consistent with the link between regression and (failed) affect regulation, Freud found that regressive behaviors occurred especially when his clients were undergoing painful experiences. Freud linked regression to his developmental model (of oral, anal, and genital stages, etc.) and considered regression as essentially a maladaptive form of coping.

Our perspective on regression departs from the Freudian conception in several important aspects. First, we hold that regression may include any movement from higher, more sophisticated levels towards lower, more elementary levels of action control. For instance, regression might cause a person to switch from intentional action control towards well-practiced behavioral routines that were learned during adulthood rather than childhood. This view is more consistent with Pierre Janet's (1903) original concept of *psychastenia* than with Freud's developmental interpretation of regression. Janet defined psychastenia as a loss of high-level processing, that is as an impairment of "mental synthesis", a concept that anticipated modern concepts of coherence-producing functions (Bolte, Goschke & Kuhl, 2003; Kasser & Sheldon, 1995).

Another distinctive feature of our concept of regression is that the reduction of top-down control need not always be maladaptive. First, compared with high-level action control, low-level action control requires less energy resources (Vohs & Baumeister, in press), less attention (Gilbert, Pelham, & Krull, 1988), and less coordination between different subsystems (Kuhl, 2001). Low-level action control can thus be maintained under extremely challenging conditions, long after high-level action control systems have already collapsed. Second, low-level action control can usually be implemented more quickly than high-level action control. Even the most efficient forms of high-level action control may take at least a few seconds to become translated into behavior (Koole & Jostmann, 2003; Rosahl et al.,

1993). By contrast, low-level action control may permit people to act within a fraction of a second (Libet, 1985).

A classic example of the distinction between high- and low-level action control can be found in the attribution literature (Gilbert et al., 1998). People can make person attributions very rapidly and automatically, whereas taking the situations into account involves more effortful and time-consuming cognitive processing. Under acutely threatening circumstances, making only automatic person attributions could save precious time and resources and thus be vital to survival. Third, regression can be advantageous in environments that are completely unpredictable and erratic (Kuhl & Beckmann, 1994a). High-level forms of action control are typically based on complex rules or regularities that are extracted from the environment. Whenever such regularities do not exist or are no longer valid, high-level action control will be unable to produce any benefits over low-level action control. When goals or desires turn out to be unrealistic, for example, state orientation may be necessary in order to disengage from those goals and incentives (Heckhausen & Schulz, 1995; Klinger, 1975).

Finally, prolonged phases of regression may be the motor for personal development and deeper forms of learning (McClelland, McNaughton & O'Reilly, 1995; Kuhl, 2001) because profound self-development requires self-revision ("accommodation") rather than chronic self-assertiveness in terms of applying existing self-knowledge ("assimilation"). In order to be able to revise self-schemas one has to be able to inhibit existing ones which is tantamount to our definition of regression. This notion is consistent with classic psychodynamic ideas (Jung, 1936) and empirical findings suggesting that personality styles or types associated with an increased tolerance for negative affect (e. g., introversion, neuroticism, and state orientation) are characterized by a strong desire for promoting self-development, striving for personal truthfulness and searching deeper meaning in life (Biebrich & Kuhl, 2001).

Hesitation and preoccupation, the two most studied forms of state orientation, can be seen as two specific forms of regression. Hesitation effectively prevents high-level intentions from influencing the person's behavior, so that behavior control is only possible through lower-level systems such as habits or routines. As a form of regression, hesitation may be adaptive when planful action is unlikely to produce positive outcomes. For instance, when the environment is very complex or unpredictable, it may be better to "sit still" and wait before one engages in a risky course of action. Research has indeed shown that, relative to action-oriented individuals, state-oriented individuals (especially of the hesitation-type) take more time to deliberate on decision problems (Niederberger, Engemann & Radtke, 1987; Stiensmeier, Schürmann, & Stulik, 1991).

Notably, this difference in decision time emerges especially when the decision problems are relatively inconsequential. For more consequential decisions, action-oriented individuals increase their decision times to the level of state-oriented individuals. State-oriented individuals are thus inclined to devote much attention to their decisions, regardless of the consequences that are attached to these decisions. This pattern could be adaptive in dangerous environments where even decisions that seem relatively minor could turn out to have detrimental consequences later on. Their willingness to keep an open mind about things can make state-oriented individuals more objective information processors than action-oriented individuals. Indeed, research has shown that state-oriented individuals - unlike their action-oriented counterparts- do not become more inclined to devalue rejected alternatives (Beckmann & Kuhl, 1984) and remain less certain about a decision (Stiensmeier-Pelster, 1994), even after they have made the decision.

State-oriented individuals of the preoccupation-type are unable to inhibit intrusive thoughts and negative ruminations. In terms of our regression account, preoccupation appears to prevent high-level cognitive representations (i.e., extension memory) from controlling the

person's experience, such that experience becomes under the control of low-level cognitive systems that are highly sensitive to incongruencies and negative affect. Research has indeed shown that the ruminations of state-oriented individuals (particularly those of the preoccupation-type) typically involve either low-level features of an uncompleted task (Baumann & Kuhl, 2003) or negative self-reflective thoughts (Brunstein & Olbrich, 1985). A study by Beckmann (1989) found further that state-oriented individuals who had been deprived of an expected reward (a condition that presumably induces stress) subsequently displayed better performance on a simple perceptual task (i.e., recognizing tachistoscopically presented words). Preoccupation thus goes hand in hand with facilitation of low-level perception, consistent with our regression account.

As a form of regression, preoccupation may be adaptive when high-level representations of one's past experiences cannot be used to deal with new events. For instance, when people encounter a very dangerous situation that they have not encountered before, they are probably well-advised to screen the situation for new information without assigning too much priority to the high-level overview of their inner needs, motives and other high-level concerns. The facilitation of low-level perceptual processing displayed by state-oriented individuals should be highly adaptive under this kind of circumstance because it facilitates selective attention to the most relevant information.

Social Benefits

We have now identified some potential benefits of state orientation from the perspective of the state-oriented person him- or herself. Yet state-oriented individuals do not operate in a vacuum. As we saw earlier, social relationships appear to play an important role in shaping individuals' predisposition towards state orientation (Kuhl, 2000). In addition, the self-regulatory benefits which state-oriented individuals may derive through symbiotic relationships point to the relevance of state orientation to interpersonal interaction. Any

complete understanding of the costs and benefits of state orientation therefore must consider how a person's state orientation interacts with the interests of the social environment.

Because of our culture's emphasis on self-reliance and personal autonomy, society may often react negatively to state-oriented individuals. Indeed, a recent study showed that managers give lower evaluations of state-oriented workers of the hesitation type (Diefendorff et al., 2000). Conceivably, managers may react negatively to the volitional inefficiency and indecisiveness that accompany hesitation. This interpretation is bolstered by findings that state orientation (in interaction with other personality styles) was associated with associated with lower sales performance among managers of a large insurance company (Kuhl & Kazén, 2003). In a related vein, people may become exasperated by the ceaseless ruminations and anxieties that characterize the preoccupation type of state orientation. Consistent with this, research indicates that chronically depressed students (who are likely to be high on preoccupation, Kuhl & Helle, 1986) receive more negative evaluations from their roommates (Swann, Wenzlaff, Krull, & Pelham, 1992).

Even though state-oriented individuals may not be particularly popular, society may still have something to gain from state-oriented individuals. One striking quality of state-oriented individuals is their ability to follow external directives, even when this goes at the expense of their own personal needs (Kuhl & Kazén, 1994). This remarkable talent for self-denial is presumably based on the inhibition of high-level self-representations (i.e., extension memory) that characterizes for state-oriented individuals (especially under acute stress). High-level self-representations contain information about own emotional preferences and autobiographical experiences. Consequently, inhibition of the self renders state-oriented individuals extremely sensitive to social demands and expectations. Indeed, research has shown that state-oriented individuals are more prone towards conformity in the classic Asch paradigm relative to action-oriented individuals (Beckmann, 1997). Moreover, state-oriented

individuals identify with others' demands to such a degree that they become prone to mistake external directives for self-chosen goals (Baumann & Kuhl, 2003; Kuhl & Kazén, 1994).

Ironically, this "self-infiltration effect" becomes especially strong when the externally suggested goals run counter to state-oriented individuals' own emotional preferences (Kazén, Baumann, & Kuhl, 2003). This is presumably because disliked goals are especially prone to trigger negative affect, which further undermines the ability of state-oriented individuals to access their true emotional preferences.

State-oriented individuals' inclination to conform with social pressures leads these individuals to embark on activities that bring them no genuine emotional satisfaction (Kazén et al., 2003), at least in the short run. At the same time, the social environment is likely to benefit from the conformity of state-oriented individuals. For instance, a manager might get her state-oriented employees to work long hours of overtime, even when this means that these employees will neglect their friends and family. As long as the behavior in question does not require sophisticated self-regulation skills, the self-inhibition that accompanies self-infiltration should not lead to decreases in performance. Indeed, strong identification with unpleasant activities may motivate state-oriented individuals to invest more efforts into the activities than action-oriented individuals. This prediction was recently tested by Koole and Jostmann (2003). In this study, participants were first required to perform some basic arithmetic sums, a task that pre-tests had revealed to be simple but rather boring. One half of the participants could earn a few Euros extra by performing better on a second set of similar arithmetic sums. Presumably, this manipulation created some pressure towards self-infiltration of the arithmetic task. The remaining participants received an extra few Euros because they had performed exceptionally well compared with other participants during the first set of sums. The latter manipulation simply affirmed participants' ability to do well on the task.

After the reward contingency manipulation, all participants were asked to perform a second set of arithmetic sums. Participants' performance on these sums is displayed in Figure 2. In the non-contingent reward condition, state-oriented participants were outperformed by action-oriented participants. Conceivably, the non-contingent reward manipulation led to an increase in achievement motivation among action-oriented individuals, because this manipulation emphasized participants' ability to do well in the task. By contrast, in the performance-contingent reward condition, state-oriented participants outperformed action-oriented individuals. This positive side of state orientation may be regarded as a specific form of *frustration tolerance*: State-oriented individuals seem to be good at unattractive tasks that require a lot of self-discipline. State-oriented individuals can be persistent and successful at tasks or activities that cannot be made “attractive”, even by the most creative self-motivational efforts. Indeed, experimental findings indicate that state-oriented participants' ability to stick with unattractive tasks can even become undermined by rewarding procedures (Fuhrmann & Kuhl, 1998). At any rate, the Koole and Jostmann (2003) findings indicate that performance pressures may sometimes induce state-oriented individuals to outperform action-oriented individuals. Theoretically, this effect should occur under the same conditions as the self-infiltration effect (Kuhl & Kazén, 1994), i.e., for unattractive activities and under stress. An additional requirement is probably that the performance should be relatively simple, so that it does not call on high-level self-regulation.

State-oriented individuals' conformity with social pressures may constitute an important building block of modern society, which frequently requires its members to engage in monotonous and intrinsically unattractive activities (Martin, 1999). However, state orientation may yet have further social benefits. More specifically, important benefits may arise from the complementarity between action- and state-oriented members. As we have seen throughout this chapter, action- and state-oriented individuals possess very different

strengths and weaknesses. Accordingly, the two types may jointly accomplish more than each would do on their own. For instance, action-oriented individuals may provide emotional support to state-oriented individuals under acute stress, when state-oriented individuals are unable to calm themselves down. In turn, state-oriented individuals may contribute their sensitivity for potential risks (as a remedy against excessive optimism), their sensitivity for their own and others' feelings (as a remedy against the emotional insensitivity that sometimes characterizes very active people), or their willingness to give in to their more self-assertive group members. Initial support for the complementary nature of action and state orientation has been observed among airbus crews, where crews consisting of an action-oriented pilot and a state-oriented co-pilot were found to be more effective than fully action-oriented or state-oriented crews (Haschke & Kuhl, 1995). Similar mutually beneficial exchanges may be an important vehicle for social and cultural advancement (Baumeister, in press).

Summary and Conclusions

Contemporary society and psychological research have emphasized the vital importance of possessing efficient affect regulation skills (Goleman, 1995; Gross, 2002; Kuhl & Koole, in press). Even so, many individuals continue to have a hard time in controlling their own affective states (Kuhl & Beckmann, 1994a; Martin & Tesser, 1996). These "state-oriented" individuals are at increased risk for developing functional deficits under stress, including drops in complex cognitive performance, alienation from the self and own emotional preferences, impaired ability to execute intended actions, and even psychological disorders. At the same time, state orientation is highly prevalent, as around half of the individuals within non-clinical populations profess to have a state-oriented coping style. In view of the widespread prevalence of state orientation, we raised some important questions about the adaptive significance of state orientation. Is state orientation always maladaptive?

Or is it possible to delineate some ways in which state orientation might yield beneficial outcomes?

Our analysis suggests at least three ways in which state orientation can be adaptive. First, external support may help state-oriented individuals to remain free from stress, and thus to avoid the self-regulatory problems that state-oriented individuals tend to experience under acute stress. Indeed, state-oriented individuals may outperform action-oriented individuals under supportive conditions, even at complex tasks (Menec, 1995). Second, state orientation can sometimes be adaptive under acute stress. In very dangerous and unpredictable environments, high-level action control systems may not be useful, because high-level systems are predicated on the existence of (complex) regularities in the environment. Under conditions of low controllability, state orientation may be adaptive because it leads to the channeling of energy resources towards lower-level control systems (i.e., through self-regulatory regression). More specifically, preoccupation-type state orientation may help to keep the individual's attention focused on a potential threat rather than downplaying actual threats and risks to maintain an inappropriate form of action control. Hesitation-type state orientation may prevent the individual from engaging in premature action. Finally, state orientation can have important benefits within the broader context of interpersonal relationships. State orientation may foster conformity and even identification with social demands that run counter to the state-oriented person's own emotional preferences. Moreover, state-oriented individuals may complement action-oriented individuals in important ways, so that groups or dyadic relationships may function better as a whole when they incorporate both kinds of individuals.

Although the present chapter has emphasized the potential benefits of state orientation, we certainly do not mean to argue that state orientation is always superior to action orientation. Rather, we believe that the choice between a state- versus action-oriented

way of coping involves a tradeoff between various costs and benefits. We thus do not dispute that state orientation frequently has important disadvantages, (Kuhl & Beckmann, 1994a; Kuhl & Koole, in press). However, we argue that state orientation is not purely self-destructive, given that the functional costs of state orientation may be offset by potential benefits. State orientation thus seems similar to other apparently self-destructive behaviors that upon closer inspection involve a tradeoff between psychological costs and benefits (Baumeister & Scher, 1988). Notably, our notion of "tradeoff" does not imply a conscious decision on the part of the individual to be either state- or action-oriented. Rather, we assume that the predisposition towards state- or action-orientation becomes established across multiple coping experiences, beginning already during infancy (Kuhl, 2000). The "decision" to cope with life events in a state- or action-oriented manner may thus develop unconsciously and over an extended period of time. At the same time, personal predispositions may maintain some level of flexibility, as action- versus state-orientation can be changed in adults through directed therapy (Kaschel & Kuhl, 2004; Schulte et al., 1997).

The notion that state orientation involves a tradeoff between costs and benefits is important for both theoretical and practical reasons. Theoretically, our understanding of state orientation remains incomplete as long as it remains unknown why individuals develop a tendency to cope with events in a state-oriented manner. An analogy may be drawn here with the study of self-esteem, which was initially hailed by psychologists as an antidote to virtually all imaginable personal and societal problems. This overly optimistic view was corrected only after the sobering results of some 20.000 subsequent studies became known (Baumeister, Campbell, Krueger, & Vohs, 2003). Given that affect regulation is nowadays advertised as the hallmark of emotional intelligence (Goleman, 1995), affect regulation researchers might similarly become tempted to simply assume the merits of their favorite psychological construct long before the necessary empirical evidence is in. We strongly

encourage affect regulation researchers to take a more critical approach to the question whether strong affect regulation skills are always desirable. Before we researchers encourage educators to adopt affect regulation trainings as part of their curriculum, it is necessary to conduct much more systematic investigations of the merits of strong affect regulation skills and the possible hidden benefits of having "weak" affect regulation skills.

Keeping an open mind to the possible benefits of state orientation seems equally important for practical purposes. The implicit or explicit goal of many therapies is to increase the individual's affect regulation skills, and thus, to make the individual more action-oriented (Schulte et al., 1997). Because of this orientation, it may be easy for therapists to overlook the benefits that the individual may obtain from being state-oriented and to overlook that not every state-oriented person develops psychological symptoms. The social functions of state orientation seem equally relevant to the therapeutic process, in that the social environment may often gain from keeping individuals state-oriented so that they will comply more easily with the demands of the social environment. An intervention that attempts to transform a state-oriented client into an action-oriented one without taking the potential tradeoffs into account may cause serious harm.

At the outset of this chapter, we noted how both society and psychologists alike have placed a premium on efficient affect regulation skills. From this perspective, state-oriented individuals are suffering a miserable lot, as they are unable to take charge of their emotional life. Taking a somewhat different point of view, we have argued that there exists another side of state orientation. State orientation may have important benefits through social support, through regression from self-regulatory resources that are not always useful, and through substantial altruistic contributions within a broader social context. It thus seems unwise to write state orientation off as a purely self-destructive coping style.

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*Table 1: Illustrative Items of the ACS90 (Kuhl, 1994)**Preoccupation (Threat-Related Action Orientation)*

- 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*
- If I've worked for weeks on a project and then everything goes completely wrong with the project:
 - A. It takes me a long time to adjust myself to it.
 - B. It bothers me for a while, but then I don't think about it anymore*
- 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

Hesitation (Demand-Related Action Orientation)

- 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 over and done with*
- When I am getting ready to tackle a difficult problem
 - A. It feels like I am facing a big mountain I don't think I can climb
 - B. I look for a way to approach the problem in a suitable manner*
- When I have a boring assignment:
 - A. I usually don't have a problem getting through it*
 - B. I sometimes just can't get moving on it

Note: Action-oriented responses are marked with an asterisk.

Footnotes

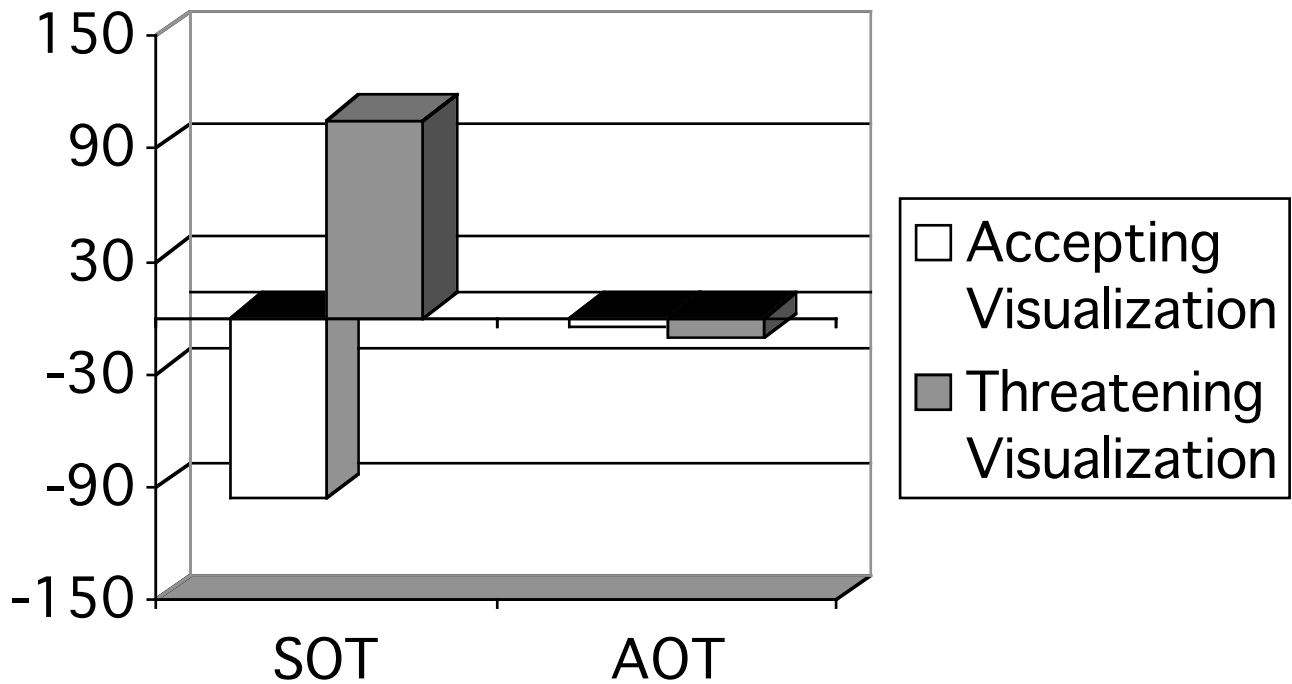
1. PSI theory (Kuhl, 2001) also distinguishes non-volitional forms of affect regulation, which are mediated by more automatic systems that operate independently of central executive processes. Examples of non-volitional forms of affect regulation are the perceptual blocking of undesirable information (Bruner & Postman, 1948) or repression (Weinberger, Schwarz, & Davidson, 1979). These more automatic forms of affect regulation are typically less flexible than volitional forms of affect regulation, because automatic affect regulation is not attuned to the person's action goals. Theoretically, the construct of action versus state orientation refers only to volitional, top-down forms of affect regulation. Because the present chapter is only concerned with volitional affect regulation, we will use the term "affect regulation" in the present context to refer to volitional affect regulation. This more narrow use of the term corresponds to the typical understanding of the term "affect regulation" as a volitional process.

2. Given the aforementioned evidence that state orientation is positively correlated with emotional suppression tendencies (Koole, in press), it appears that state-oriented individuals often refrain from expressing their negative affect to others. Conceivably, suppressors are more likely to develop a state orientation, because their emotional inhibition prevents them from developing volitional affect regulation skills. If this reasoning holds, state-oriented individuals high on emotion suppression might be in an especially difficult predicament, because their emotion regulation styles keep these individuals from obtaining the very affective support that could help them resolve their self-regulatory problems. However, it is also possible that state-oriented individuals often feel reluctant to burden others with their negative affect. According to the latter interpretation, the correlation between state

orientation and emotion suppression is a socially adaptive pattern. More research is needed to explore these various possibilities.

3. Strictly speaking, lower levels of self-regulation still represent internal forms of regulation, so that regressive functioning might be said to be "bottom" and not "bottom-up". However, the lower the level of self-regulation, the more the person's behavior is controlled by rigid mechanisms which have an almost one-to-one relation with the external stimuli that are encountered by the person. In this sense, regression could be said to induce more bottom-up control by the environment.

Figure 1: Implicit Self-Evaluations Related to Loss of Autonomy as a Function of Visualization and Threat-Related Action Orientation (Koole, in press).

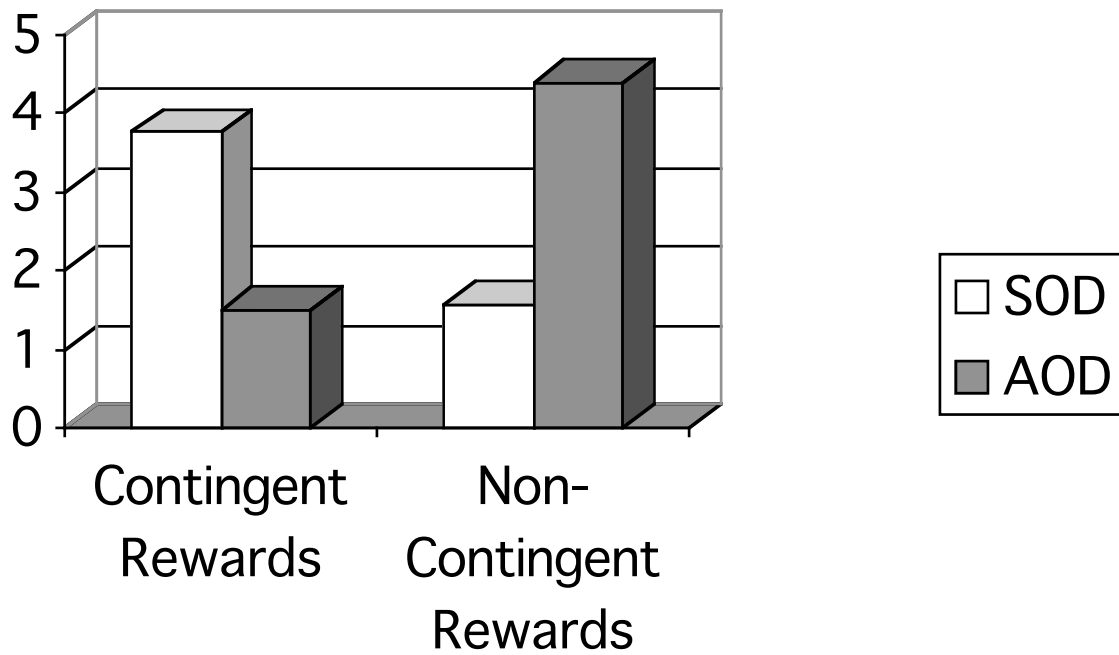


Note 1: SOT = Threat-Related State Orientation, AOT = Threat-Related Action Orientation

Note 2: During the experimental task, participants evaluated positive and negative target words that were preceded by self-related primes (the word 'I') or neutral primes ('xx').

Implicit self-evaluations were computed by subtracting evaluation latencies to self-primed targets from evaluation latencies to neutral-primed targets. Latencies were coded such that higher numbers indicate greater activation of implicit evaluations of the self as weak and dependent.

Figure 2: Arithmetic Performance as a Function of Performance Contingency and Demand-Related Action Orientation (Koole & Jostmann, 2003).



Note 1: SOD = Demand-Related State Orientation, AOD = Demand-Related Action Orientation

Note 2: To control for individual differences in arithmetic ability, arithmetic performance during a pretest was subtracted from the test performance.