Affect and Self-Regulation under Mortality Salience

Doctoral Thesis

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Death borders upon out birth, and our cradle stands in the

grave. – Joseph Hall

Chapter 1

An Introduction of Affective Reactions towards Death and

Self-Regulation of Affective States

In Germany the Federal Statistical Office publishes statistics to very different aspects of life and even about death and dying. In total 869 582 people died in Germany in the year 2012, in most cases cardiovascular diseases were the cause of death (Federal Statistical Office, 2014). Although we seem to know very well from what people die, we usually do not think about death and dying in our everyday life. Often we think of death as of something that happens only to other people – not to us. With statistics we try to make death predictable and controllable which happens to older or ill people. Yet, death remains unpredictable and our remaining life-time is unknown. Why is it so difficult to accept, that our life has to end someday? Or put in another way: Why is it so easy to "forget" that our life-time is limited?

Intuitively one would assume that people respond with anxiety to the knowledge of the certainty of their death. Although intuitions had been proved wrong in other fields of psychological research, concerning death anxiety, terror management theory (TMT; Pyszczynski, Greenberg, & Solomon, 1999; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989) even supports the assumption of anxiety in the face of death. According to terror management theory people try to deny the fact that they have to die one day because thinking of death arouses existential fears which are overwhelming and too intense to endure. In consequence people suppress death-related thoughts and fears.

Terror management theory led to numerous studies which explored the effects of reminders of death on people. Consistent with the assumption that death-related fears are suppressed, explicit questionnaires failed to display anxiety after a confrontation with death although an increase of death-related thoughts was demonstrated (e.g. Greenberg, Arndt, Schimel, Pyszczynski, & Solomon, 2001). That means, a direct demonstration of death-related anxiety is still missing.

Isn't it fascinating that on the one hand intuitive assumptions are supported by theoretical considerations, but on the other hand, research was not able to catch the supposed death-related anxiety? Although it might be a consistent assumption that thinking about one's

own death arouses negative feelings, it is necessary to demonstrate that a confrontation with death-reminders indeed results in an affective response. This is one aim of the present thesis - demonstrating anxiety under mortality salience. For this purpose, other methods than explicit questionnaires are required. Terror management theory could be substantiated by providing direct evidence for existential fears whereas previous studies only demonstrated death-related thoughts or gave indirect clues for existential fears. Therefore, in the following paragraphs terror management theory and indirect evidence for an affective reaction under mortality salience is presented.

However, demonstrating death-related anxiety under mortality salience does not only serve academic interests by supporting a special theory. In fact, the assumption of existential fears and the possibility to assess them is important for a broad kind of other research questions like: What happens to this affective response if people were able to regulate feelings and anxiety? And how they do such self-regulations in the face of death? And what happens to people unable to regulate anxiety?

Furthermore, people differ in both their sensitivity versus "immunity" to such anxiety and their ability to handle it. Whereas terror management research has already initiated various studies concerning sensitivity to existential fears like a buffer against them and on later coping strategies, only few studies concentrate on the ability to *regulate* negative affect. This ability of self-regulating negative affect is part of the construct of action orientation (e.g. Kuhl, 1981) which itself is part of the personality systems interaction theory. Both are presented later on.

Although effects of the ability to down-regulate negative affect self- confrontational has already been demonstrated in coping with mortality salience, a demonstration of a self-regulation of affect itself is missing due to the fact that evidence for affect itself under mortality salience is missing. This thesis also aims at solving this problem, trying to show at first negative affect under mortality salience and second to connect these findings with

individual differences in the ability to self-regulate negative affect. In a last step, mechanisms on *how* people with high self-regulatory skills regulate existential fears should be elaborated.

In the following paragraphs an overview over the hypothesis of this thesis is presented. Chapter 3, 4 and 5 reveal the testing of these hypotheses, which are discussed at the end.

1.1 Terror Management Theory

Terror management theory influenced over 160 studies (Burke, Martens, & Faucher, 2010) researching the effects of reminders of death on people. Rosenblatt et al. (1989) and Pyszczynski et al. (1999) postulate different defense strategies which help people to cope with the conflicting knowledge of the finiteness of life and the wish for never ending life. More precisely, the conflict between the general knowledge that every living creature has to die and the individual wish to continue live causes existential fears in humans.

Different defense strategies aim at repressing existential fears (proximal defenses) or reduce the accessibility of death-related thoughts and fears out of focal attention (distal defenses). Proximal defenses are conscious strategies, like rationalizing death or trying to distract one. For example, thoughts like "I am young", "I am healthy" and even "everyone has to die" are rationalizations, which might help to push the reality of the individual death away or to cut out the emotional meaning of death. Whereas these defenses repress death-related fears and thoughts in consciousness, they remain highly accessible out of focal attention.

At this point, distal defenses aim at reducing the accessibility of death-related fears out of focal attention. They try to create a feeling of meaning and are summed as strategies to either boost the own self-esteem (Arndt, & Greenberg, 1999; Cox et al., 2008, Routledge, 2012) or defend the own cultural worldview (Arndt, Greenberg, Pyszczynski, & Solomon, 1997; Hayes, Schimel, & Williams, 2008; McGregor, Gailliot, Vasquez, & Nash, 2007). Now, that death is out of mind, people try to feel good with themselves by either being a

valuable person themselves, which is the fact for people with high self-esteem, or being a part of an important value system, like the own culture. Defending the own culture under mortality salience is perceived as the attempt to reach at least symbolic immortality by being a part of the culture which outlasts. Evidence for cultural worldview is found in effects of higher evaluation of people who praise the own culture compared to a devaluation of people who criticize it (e.g. Arndt et al., 1997) and there is large research on the impact of mortality salience on stereotypes (Schimel et al., 1999) and political attitudes (Arndt, Lieberman, Cook, & Solomon, 2005; Cohen, Jussim, Harber & Bhasin, 2009; Landau et al., 2006).

At the same time, the need for cultural worldview defense under mortality salience was found to be indirect evidence for existential fears, as there would be no need for coping if death wouldn't arouse an affective response. Further indirect support for the assumed negative affective responses is elaborated in the following paragraph.

1.2 Terror in Terror Management Theory

Defense strategies like cultural worldview defense are well established, nevertheless, evidence for existential fears is still missing. Explicit questionnaires fail to show anxiety after a confrontation with death (for an overview see Solomon, Greenberg, & Pyszczynski, 2004). This is no problem for terror management theory, as Solomon et al. (2004) states that this lack of affect is due to the successful suppression of anxiety (Pyszczynski et al., 1999). After being reminded of death, there is a potential for anxiety to be experienced but all defense strategies aim at avoiding and suppressing this affective reaction. Despite the theoretical explanation for a lack of negative affect under mortality salience, terror management theory provides indirect evidence for an affective reaction towards death.

First of all, the need for distal defenses like cultural worldview defense is perceived as supporting the assumption that a confrontation with death arouses fears which are suppressed

out of focal attention. In other words, the fact that persons reminded of their mortality show a different behavior compared to persons not reminded of death is noticed as evidence that something happens, when people think of death and dying. It is assumed that anxiety is aroused by thinking about death.

In a second step, the anxiety buffering effect of self-esteem is declared as evidence for an affective reaction under mortality salience (e.g., Greenberg, 2008; Greenberg et al., 1992). Self-esteem has been shown to reduce cultural worldview defenses (Arndt & Greenberg, 1999; Greenberg et al., 1993; Harmon-Jones et al., 1997) and in reverse threatening self-esteem results in higher accessibility of death-related thoughts (Hayes, Schimel, Faucher, & Williams, 2008; Routledge, 2012). In a meta-analysis, Burke, Martens and Faucher (2010) stated that this is in particular true for the implicit self-esteem which buffers existential threat. Thereby, (implicit) self-esteem is part of a protection against existential fears, so that less existential fears in people with high self-esteem results in less cultural worldview defense as there is less need for coping.

At last, different physiological responses demonstrate the effect of mortality salience. Greenberg et al. (2003) showed that when people got the idea, that they are unable to feel anxiety because of a drug, they showed less cultural worldview defense. That means, the idea of being unable to feel anxiety helps to cope with death-related fears out of focal attention. Additionally, Quirin and colleagues (2012) demonstrated different patterns of neural activation under mortality salience compared to dental pain. Again, this supports the assumption for anxiety aroused by death. However, a direct demonstration of affect itself is missing, a problem which is addressed in Chapter 2.

1.3 Individual Differences in Coping with Mortality Salience

Besides general effects of mortality salience, research had turned towards individual differences in answer to a confrontation with death. Thereby, traits are differentiated by the question if they are helping or impede coping with mortality salience. Although research does not divide these traits any further, in line with the theory of personality systems interaction, one can describe traits of *affect sensitivity*, that is how easily people enter an affective state , versus traits of *affect regulation*, that means how easily people leave an affective state (Baumann, Kaschel, & Kuhl, 2007; Biebrich & Kuhl, 2002).

In my view and according with this differentiation, traits in terror management research can be divided in those which buffer or intensify mortality salience (*sensitivity* for mortality salience) in contrast to traits which help to *regulate* mortality salience. There is large body of research in interindividual differences influencing reactions under mortality salience, however, for the sake of a greater clarity, here they are differentiated in these categories of affect sensitivity and affect regulation. That means some traits change the threshold of entering the state of existential fears whereas others help or impede leaving the state of existential fears. In the following, traits which influence affect sensitivity are elaborated first, whereas traits which influence affect regulation are discussed in the next paragraph.

Research has identified traits like high implicit self-esteem, as discussed above, attachment style (e.g. Mikulincer & Florian, 2000; Mikulincer, Florian, & Tolmacz, 1990) and religiosity (Edmondson, Park, Chaudoir, & Wortmann, 2008; Jonas, & Fischer, 2006; Norenzayan, Dar-Nimrod, Hansen, & Proulx, 2009) as helpful for people confronted with death. As already stated self-esteem is perceived as anxiety buffer under mortality salience. Indeed, a secure attachment style and close relationships seem to buffer anxiety as well (Florian, Mikulincer, & Hirschberger, 2002), whereas separation reminders increase death-

thought accessibility (Mikulincer, Florian, Birnbaum, & Malishkevich, 2002). In a similar way, high religiosity protects against mortality salience (Edmondson et al, 2008; Jonas & Fischer, 2006). Feifel and Branscomb (1973) showed that higher religiosity is connected to less anxiety concerning personal death, and mortality salience led to higher religiosity (Norenzayan, & Hansen, 2006), although extreme religiosity may lead to negative outcomes like more support for extreme military interventions (Rothschild, Abdollahi, & Pyszczynski, 2009) or a rejection of medical support concerning diseases (Vess, Arndt, Cox, Routledge, & Goldenberg, 2009).

However, in general high implicit self-esteem, a secure attachment style, close relationships and religiosity seem to protect against existential fears. Considering the differentiation between affect sensitivity and regulation mentioned above, these traits increase the threshold for mortality salience. People who bring along those traits enter the state of mortality salience less easily compared to people who lack those traits.

In contrast to these traits, research has identified traits which are especially disadvantage in dealing with death and dying, above all neuroticism. Consistent with the theory of personality systems interaction neuroticism can be perceived as higher sensitivity for negative affect (Baumann et al.2007) and in the field of terror management Arndt and Solomon (2003) showed that neuroticism results a in lower need for control under mortality salience which is perceived as a giving up in the face of death. Persons high in neuroticism spent less time turning towards physical sensation, even if it was pleasurable (Goldenberg et al., 2006) and inhibited body-oriented behavior (Goldenberg, Heflick, & Cooper, 2008). Goldenberg and colleagues (1999) found that persons high in neuroticism found sex under mortality salience less interesting, although this effect disappeared when the connection of sex and love was primed.

In sum, research has identified traits which increase the threshold for death-related fears, like the buffering effect of self-esteem, attachment style and religiosity, and traits which

decrease the threshold for death-related fears, like neuroticism. Next to affect sensitivity individual differences in affect regulation are important, these are presented in detail below.

1.4 Affect-Regulation under Mortality Salience

Research has also turned to different traits which are helpful in *regulating* death-related fears, like self-control or self-regulation of negative affect. Gailliot, Schmeichel, and Baumeister (2006) showed that trait self-control is helpful in coping with mortality salience and can be differentiated from effects of self-esteem (Gailliot, Schmeichel, & Maner, 2007). Whereas self-esteem buffers mortality salience, self-control is used to suppress existential fears and death-related cognitions. Ferraro, Shiv and Bettman (2005) addressed this difference as well and demonstrated that self-control is especially used to defend aspects of the self which are an important source of self-esteem.

In a similar way, persons with high self-regulatory skills were shown to be able to suppress the connection of death and wilderness (Koole & Van den Berg, 2005) and to defend their culture in Germany where national pride is judged negatively (Kazén, Baumann, & Kuhl, 2005). Although in research self-control and self-regulation are often used interchangeable, these two mechanisms are differentiated in the theory of personality systems interaction (PSI; Kuhl, 2000, 2001), describing self-control as a more restrictive mode of controlling and suppressing unwanted thoughts and feelings, whereas self-regulation is described as a more flexible, intuitive process of integrating negative feelings in a broader network of personal experiences. A general overview over personality systems interaction theory is given below and a more elaborated differentiation between self-control and self-regulation is given in the following paragraph.

1.5 Affect-Regulation within the Theory of Personality Systems Interaction

The theory of personality systems interaction (PSI theory, Kuhl 2001) assumes four macro systems and their interaction to model personality and differences in personality. Within these interactions affect plays a special role, because it is expected to inhibit or facilitate connections between the macro systems. For a better understanding, the four macro systems are shortly introduced and differences between self-regulation and self-control are discussed. The four macro systems can be arranged as two high-level processing systems, the *extension memory* and the *intension memory*, and two low-level processing systems, the *object recognition system* and the *intuitive behavior control*.

The *extension memory* is conceived as a high-level processing system based on large networks of information including own feelings, episodic memories and values. It is characterized by its integrating ability, able to connect even conflicting information like positive and negative feelings and experiences at one time. It provides large semantic networks, operates in a holistic way by using a large amount of information for a conclusion, and relies on right-hemispheric processing (Kuhl, 2000). Included within the extension memory is the self as that part which contains all self-relevant information like personal memories, needs and values (Baumann & Kuhl, 2003). The extension memory is described as a system of intelligent intuition and important in a variety of situations, for example for entirely understand another person. Besides the possibility to integrate conflicting information, the extension memory is also capable of considering other peoples' needs and values next to own ones. This fact is especially important for research on terror management, as research often revealed terror management defenses which include ignoring one others

feelings, for example aggressive behavior (McGregor et al., 1998; McPherson, & Joiremen, 2009).

In contrast to the extension memory, the *intension memory* is a left-hemispheric operating system, characterized by a conscious and verbal representation of goals and intentions. This system serves the maintaining of intentions in difficult situations, when obstacles occur. It is characterized by logical-sequential processing and benefits from strong association of information in small networks.

Besides these high-level processing systems, PSI theory postulates two low-level processing systems. The *object recognition system* is, like its name already states, that system necessary to recognize single information and to differentiate it from the background. It is used for a detection of everything that is odd or unexpected and by that what is potentially dangerous. In the present case, one might expect that a confrontation with death activates in particular the object recognition system because death is highly threatening.

At last, the system of *intuitive behavior control* is responsible for highly automatized behavior routines. Kuhl (2001) gives the example of small talk, which is a behavior mostly automatic, information from the counterpart are fast and easily integrated into own behavior routines. Like the extension memory it is operating in parallel processing and highly unconscious, and in doing that it is very difficult to verbally express why and what reaction is expressed from which stimulus. In contrast to the extension memory, the intuitive behavior control system relies more on stimulus-response patterns which are easily expressed if the right stimulus occurs. A more elaborated processing does not take place.

All macro-systems could be useful in explaining coping strategies under mortality salience. The extension memory could be useful in proximal defenses like rationalization of death, whereas the object recognition system could be activated as death is threatening. The system of intuitive behavior control could explain behavioral routines which could occur under mortality salience.

Certainly, the extension memory or the self, respectively, seems to be most important. This has different reasons. On the one hand, the connection of the extension memory and the object recognition system is central in the explanation of *how* action oriented persons regulate negative affect. This is depicted further later on. On the other hand, the extension memory or the self, respectively, could be helpful in explaining contradictory findings in research on cultural worldview defense. Various studies initiated by terror management theory concentrated on cultural worldview defense and although TMT sums different behaviors after a confrontation with death as cultural worldview defense, these behavioral responses are less consistent than one might think.

First of all, in many cases cultural worldview defense seems to be destructive, especially when defending the own culture is accompanied by an exclusion of others, like supporting racist behavior (Greenberg, Schimel, Martens, Solomon, & Pyszczynski, 2001) or aggression against out-group members (e.g. Abdollahi, Henthorn, & Pyszczynski, 2010; Hirschberger, Pyszczynski, & Ein-Dor, 2009; Pyszczynski et al., 2006). In these examples, people defends their own culture against cultural outsiders, even if that includes being less tolerant to outsiders. The saying "attack is the best defense" may sum these behaviors.

Second, studies demonstrated even risky behaviors under mortality salience like a risky sexual behavior (Lam, Morrison, & Smeesters, 2009; Landau & Greenberg, 2006; Rosenbloom, 2003) or driving risky (Taubman-Ben-Ari, Florian, & Mikulincer, 1999; Taubman-Ben-Ari, Florian, & Mikulincer, 2000). Those results are in particular contradictory, as one might expect that people afraid of death would try anything to ensure the ongoing of their own life. In contrast, some people are even becoming more tolerant to risky behaviors. One attempt of an explanation is that these behaviors meet a more individual cultural worldview, for example driving more risky was found only for people for whom driving was an important part of their personal value system.

Third, mortality salience affects even behaviors which at first sight seem to have nothing to do with a cultural worldview, like tanning (Cox et al., 2009; Routledge, Arndt, & Goldenberg, 2004) or some behaviors which are otherwise evaluated as undesirable like being greedy and consuming (Choi, Kwon, & Lee, 2007; Kasser & Sheldon, 2000; Rindfleish, Burroughs, & Wong, 2009). Some of these behaviors are explained in serving a booster of self-esteem, like looking good and possessing resources. In the case of consumption, acquiring possessions serves the feelings to be a valuable part of a capitalistic culture.

At last, whereas some reactions after a confrontation with death seem more destructive, a more tolerant behavior (Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992) or more fair behavior (van den Bos, 2001; van den Bos, & Miedema, 2000) was found too. Again, tolerant behavior was found, if tolerance is an important value of one person (Greenberg et al., 1992).Even personal growth and well-being were found under mortality salience (Vail et al., 2012) and reminders of death imply a chance to change priorities to more intrinsic goals (Lykins, Segerstrom, Averill, Evans, & Kemeny, 2007).

In sum, behaviors after a confrontation with death are explained by either serving a general cultural worldview defense or the defense of individual values. However, at first sight there might be no systematization why in some cases people defend their culture in general and in other a more personal cultural worldview or why in some cases cultural worldview results in destructive behavior and sometimes in growth-related behaviors.

Additionally, regarded from the outside, cultural worldview strategies cannot be divided in such, which aim at deeply personal important values, and such, which are less connected to individual values, for example one might debate controversial if aggressive behavior is an individual value. However, defending important personal values in the face of death would require a process of accessing them under mortality salience. This process could be labeled as "gaining self-access".

This thesis aims at a first demonstration of self-access under mortality salience. Personal important values could only be defended if people were able retrieve them after a confrontation with death. This demonstration is urgently needed to proof that behaviors expressed under mortality salience are actually connected to personal values or to differentiate if there are even behaviors which have not connected to personal values and are better explained by other processes like behavior routines. Although the connection of self-access to cultural worldview defense is fascinating and provoked the actual studies, this thesis aims at assessing self-access under mortality salience solely

As already stated above, it is reasonable to research self-access under mortality salience for a second reason, as the extension memory or the self, respectively, plays a special role in a specific kind of affect-regulation which is elaborated further in the following paragraph.

1.5.1 Self-Regulation versus Self-Control within the Theory of Personality Systems Interaction

PSI theory assumes that the interaction of all four macro systems is important in successful behavior and that these interactions are modelled by affect. Positive affect is considered to foster the connection between intention memory and intuitive behavior control. Goals are set and transferred into behavior. However, a decrease of positive affect, for example if obstacles occur, results in an inhibition of intuitive behavior and an activation of the intention memory.

In contrast, negative affect is assumed to model the connection between the object recognition system and the extension memory and to inhibit the extension memory. Negative affect provokes the object recognition system; the detection of potential dangers is facilitated.

However, if negative affect is not regulated and reduced, access to the extension memory is obstructed. That means, under high negative affect, people are no longer able to access the extension memory and to its large networks of goals and values. In the case of mortality salience, death-reminders ought activate the object recognition system and inhibit the extension memory and by that also the self.

One example of a loss of self-access is the effect of self-infiltration, further described in Chapter 4. A loss of self-access under stressful circumstances can result in alienation, the inability to gain access to personal values and motives. This endangers people to internalize external goals or values which do not match their motivational system. However, access to the extension memory or the self, respectively, is possible again if negative affect is regulated down. The ability of regulating negative affect is conceptualized in the personality dimension of action orientation.

People differ in their ability to self-regulate negative affect, which is described as action orientation (Kuhl, 1994b). In answer to different experiences in early childhood, people develop different abilities in regulating negative affect. Self-relaxation - that is the self-regulation of negative affect - is learned in very early interactions and explained by the process of system conditioning (Kuhl, 2001). It is assumed that the simultaneous activation of two macro-systems strengthens the connection of both. Comparable with effects of classical conditioning, Kuhl expects, that if a self-expression of an infant like crying is accomplished by an external relaxation like the soothing mother the connection of negative affect and the extension memory is learned and the child develops the ability of gaining access to the extension memory under negative affect. Negative affect is hereby regulated by activating relevant personal experiences and values, for example by activating experiences in which one was successful if one is now confronted with failure.

However, if the reaction of a mother is too slow or inadequate – for example, she doesn't know what the crying of her baby means – the connection between affect and

extension memory is not learned and results in state-orientation or the inability to regulate negative affect. By now, there are various studies demonstrating the effects of action versus state orientation and the consequences of the inability to regulate negative affect like rumination (Kuhl, & Baumann, 2000; Kuhl & Beckmann, 1994) and in connection with high sensitivity for negative affect even psychiatric symptoms (Baumann & Quirin, 2006; Diefendorf, Hall, Lord & Strean, 2000; Kuhl & Helle, 1986).

Besides self-regulation, self-control describes the ability of volitionally controlling feelings and impulses. Unwanted feelings, needs and alternative actions are suppressed for the purpose of achieving a specific goal. Everything distracting is pushed out of mind. In terror management theory self-control could be used to intentionally suppress death-related thoughts and feelings or by seeking distraction from these feelings. Gailliot and colleagues (2006; 2007) already demonstrated the effects of self-control in terror management and provides evidence that self-control can be used to suppress death-related fears. However, self-control is conceived as a limited resource (Baumeister & Heatherton, 1996), which depletes over time. With regard to terror management process, self-control is useful in short-time suppression of existential fears. Over time it depletes and suppressed items can ironically reoccur (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997; Wegner, 1992).

As the unwanted death-related fears are suppressed, there is no opportunity to integrate these into a larger network. Self-control of death-related fears may be one explanation why an encounter with reminders of death has so less impact on our everyday life. In contrast, a self-confrontational coping like self-regulation of death-related fears could mean, that people are able to integrate the fact that they have to die in the individual network of personal values and needs.

1.6 Overview over the Present Studies

Chapter 1 provided the theoretical background for this present thesis. Different studies were conducted to demonstrate the assumed negative affect under mortality salience and to explore the effect of self-regulation on this affective reaction. As stated above, research in terror management has validly revealed an increase of death-related thoughts under mortality salience. Existential fears are assumed and indirect evidence is found, however, negative affect under mortality salience has not been demonstrated directly yet, because it is suppressed in consciousness. Therefore, Chapter 2 addresses this problem and explored implicit negative affect under mortality salience. It is assumed that (a) a confrontation with death-reminders arouses negative affect and (b) that this affect is suppressed in conscious experience but highly accessible out of focal attention. Hence, (c) methods to assess implicit negative affect should reveal the suppressed affective response.

In a next step, self-regulatory skills are introduced and their effects on implicit negative affect under mortality salience (Chapter 3). In line with PSI theory, action orientation is conceived as the ability to down-regulate negative affect in a self-confrontational way (e.g. Kuhl, 2001, Kuhl & Quirin, 2011). Therefore, it is assumed that (d) high action orientation results in lower negative affect under mortality salience, whereas (e) state orientation should result in higher negative affect under mortality salience.

At last, mechanisms of self-regulation in the face of death are tested in Chapter 4. According to the theoretical background of action orientation, the regulation of negative affect is accomplished by an increase of self-access. Negative affect is regulated by gaining access to the self-system. Chapter 4 explored these mechanisms under mortality salience. It is assumed that mortality salience (f) results in higher self-access in action-oriented individuals and (g) in lower self-access in state-oriented individuals.

Chapter 2

Experiencing Terror but not knowing it: Evidence for Implicit

Negative Affect under Mortality Salience

Abstract

In two studies, we explored implicit anxiety under mortality salience. Terror management theory assumes negative emotional reactions towards death and with methods to measure implicit negative affect we showed this assumed reaction. In the Operant Motive Test (OMT; Kuhl & Scheffer, 1999) in Study 1, participants in the mortality salience condition wrote significantly more stories referring to implicit anxiety than participants in the control condition. In the Implicit Positive and Negative Affect Test (IPANAT; Quirin, Kazén, & Kuhl, 2009) in Study 2, participants in the mortality salience condition judged artificial words to express more anxiety but not sadness compared to participants in the control condition. This is discussed as a very specific affective reaction of fear towards death.

Keywords: Implicit anxiety, mortality salience.

Although death waits for everyone, we don't think very much about it. A car accident, a fatal illness - no one knows how their life is going to end. Certain is, it has to end someday. Research on people with a terminal illness show that they benefit from thoughts about the meaning of that traumatic event. However, when not requested (Cozzolino, Staples, Meyers, & Samboceti, 2004), young healthy persons do not think about the meaning of death for example for their family and friends. Why is it that on the one hand, the knowledge of a terminal illness has a great impact on people's life, it can cause great distress (e.g. McCorkle & Quint-Benloliel, 1983) and anxiety (El-Jawahri et al., 2014) and sometimes a change of priorities to a more satisfying life (Taylor, 1983; Bower, Kemeny, Taylor, & Fahey, 1998), while on the other hand, the sole fact that everyone has to die has no such effects? We are reminded of our mortality by little cues in everyday life, like a cemetery (Gailliot, Stillman, Schmeichel, Maner, & Plant, 2008), videos (Nelson, Moore, Olivetti, & Scott, 1997), and even warnings of dangerous habits, like smoking (Hansen, Winzeler, & Topolinski, 2010). However, this seems to have little impact on our emotions because questionnaires consistently fail to show anxiety after a confrontation with death (for an overview see Solomon et al., 2004).

Nevertheless, the terror management theory assumes that humans react with existential fears towards the fact that their life has to end someday. However, this affective reaction is avoided and suppressed in conscious experience (Pyszczynskiet al., 1999). Frightened by thoughts of death, so much that the only way to stay capable of action is to push these thoughts out of mind - that is the picture terror management theory (TMT) draws of humans confronted with reminders of death (Greenberg, Pyszczynski, & Solomon, 1986; Pyszczynski, et al., 1999). TMT has provided an amount of indirect evidence for this affective reaction.

Although there is no explicit representation of negative affect, distal defenses like defending one's own cultural worldview (Arndt et al., 1997; Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000) suggest that people try to cope with death-related thoughts

and feelings that exist out of focal attention (Pyszczynski et al., 1999). Quirin and colleagues (2012) demonstrated different patterns of neural activation under mortality salience compared to dental pain and discussed if activation in the amygdala serves as a marker for non-conscious threat aroused by death. Additionally, consistent through different studies, self-esteem has been shown to reduce cultural worldview defenses (Arndt & Greenberg, 1999; Greenberg et al., 1993; Harmon-Jones et al., 1997), which again suggests that there is negative affect at some level of representation which is buffered by self-esteem.

Taken together, in research on reminders of death it is a common assumption that a confrontation with death arouses fear. A demonstration of this implicit affect under mortality salience is still missing. Yet, to further explore, for example, differences in coping strategies and differences in reminders of death (e.g., an illness vs. a cemetery), we first have to demonstrate that mortality salience is not just a cognitive accessibility of death-related thoughts but connected to affect. Consistent with TMT (Pyszczynski, et al., 1999), we assume the affective reaction to be implicit while explicit representations are suppressed. In the present research, we aimed at demonstrating the assumed affective reaction under mortality salience by using methods to assess implicit affect. In two studies, we used two different measures of implicit negative affect. Furthermore, we assume that the affective reaction towards reminders of death is an increase in implicit anxiety and not in general implicit negative affect, for example sadness.

2.1 Study 1

In Study 1, we measured implicit anxiety by using the Operant Motive Test by Kuhl and Scheffer (OMT, Kuhl & Scheffer, 1999), which is commonly used to assess people's strategies to satisfy their motives (e.g., Baumann, Kaschel, & Kuhl, 2005; Gröpel, 2008; Schüler, Job, Fröhlich, & Brandstätter, 2009; Job, Oertig, Brandstätter, & Allemand, 2010,). The OMT differentiates strategies which are driven by positive affect (approach-motivated approach behaviour), implicit anxiety (avoidance-motivated approach behaviour), and explicit anxiety (passive avoidance). This can be seen by different emotional words which participants use in short stories they write in response to ambiguous pictures. For example, for the affiliation motive, stories about security and being loved (vs. intimacy and mutually loving) indicate negative (vs. positive) affect as an underlying source of motivation. Although security is subjectively experienced as positive, it primarily serves the function to avoid fear (MacDonald, 1992; Kuhl, 2001; Scheffer, 2005). For the achievement motive, stories about pride after success indicate a positive affective source whereas stories about relief after success indicate a negative affective source of motivation, that is, the (not mentioned) fear to fail has been successfully avoided. In contrast to stories in which anxiety is explicitly mentioned, such story contents indicate implicit rather than explicit anxiety. Further examples of contents coded as positive affect, implicit anxiety, and explicit anxiety are listed in Table 1.

Table 1: Indicators of Positive Affect and Implicit and Explicit Negative Affect in the Operant Motive Test (OMT; Kuhl & Scheffer, 1999)

	Affiliation	Achievement	Power
Positive Affect (approach behavior driven by positive affect)	*Intimacy* - mutual, joyful exchange - love, empathy *Sociability* - extraverted contact, interest - entertainment, good mood	*Flow* - curiosity and interest - absorption, fun with a task *Inner Standards* - doing something well - feeling proud after success	*Guidance* - helping and protecting others - conveying values, feeling calm *Status* - being the focus of attention - having prestige and authority
Implicit Negative Affect (approach behavior driven by negative affect)	*Coping with Rejection* - positive reevaluation of rejection - restoring an attachment - delimitation, dislike, disgust *Avoiding Insecurity* - safety, security, familiarity - closeness - being loved	*Coping with Failure* - positive reevaluation of failure - seeing demands as challenges - task rejection ("disengagement") *Pressure to Achieve* - social standards, trying to be best - effort (with success), hope - feeling relieved after success	*Coping with Power-related Threats* - asserting wishes - expressing feelings - relaxation despite opposition *Inhibited Power or Dominance* - fear of using power - many actions, having 'survived' - overt dominance
Explicit Negative Affect (passive avoidance and conscious fear)	*Dependence* - being lonely, rejected - desperate, hopeless, sad	*Failure* - feeling stressed, helpless - disappointed, anxious	*Powerlessness* - being a petitioner - feeling obedient, guilty, sick

2.1.1 Participants

One-hundred-thirty students (72 woman and 58 men) took part in this study. Their age ranged from 18 to 79 years ($M = 42.90$, $SD = 20.79$). The sample also included students from a senior study program.

2.1.2 Materials

2.1.2.1 Implicit and Explicit Mood

The Operant Motive Test (OMT; Kuhl & Scheffer, 1999) was used to assess implicit and explicit anxiety under mortality salience. The OMT consists of 15 pictures which are representative for the three major motive themes of affiliation, achievement, and power. Participants were asked to identify with one of the displayed characters and to write down their spontaneous associations to the following questions: (a) "What is important for the person in this situation and what is the person doing?" (b) "How does the person feel?" (c) "Why does the person feel this way?" and (d) "How does the story end?" Answers to the first question provide information about the presence of a motive (i.e., affiliation, achievement, and power). The answers to the second and third questions provide information about the strategies for satisfying these motives and the affective source of motivation. Answers to the last question provide further information if answers to the former questions are ambivalent. If the story contains a motive, one of 15 categories (3 motives x 5 strategies) is coded (see Table 1) - otherwise, a zero is coded (for the complete coding scheme see Kuhl & Scheffer, 1999)[1].

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[1] In the OMT, scores for motives and strategies are stochastically dependent because every answer can only be coded in one category, which excludes a second coding of another category. Therefore, we skipped a representation of intercorrelations.

The OMT differentiates four approach strategies for each motive on the basis of crossing two affective sources of motivation (positive vs. negative affect) with self-determined versus incentive-focused forms of motivation. In addition, the OMT contains a passive avoidance component, measuring explicit anxiety for each motive (fear of exclusion, fear of failure, and fear of powerlessness). Extensive research on the OMT is described by Baumann, Kazén, and Kuhl (2010) and Kuhl, Scheffer, and Eichstaedt (2003). Scoring was carried out by well-trained assistants who had attained sufficient reliability across several studies.

For the present study, *positive affect* was computed by summing the self-determined and incentive-focused approach strategies driven by positive affect across the three motives (see rows 1 and 2 in Table 1). *Implicit anxiety* was computed by summing the self-determined and incentive-focused approach strategies driven by negative affect across the three motives (see rows 3 and 4 in Table 1). *Explicit anxiety* was computed by summing the passive avoidance components across the three motives (see row 5 in Table 1).

2.1.2.2 Mortality Salience Induction

Mortality salience was induced by a text about cancer and the treatment of cancer. Included was the statement that cancer is always a fatal disease if not identified early and treated properly. Participants should read this text and choose their preferred treatment of cancer, either traditional or alternative. For this, data were provided how many patients survived the treatment, how many lived longer than one year and how many lived longer than five years. The text was used only for mortality salience induction, the decision participants made was irrelevant. Participants of our control condition read a similar text about hair loss and should choose between a traditional or alternative treatment of hair loss.

2.1.3 Procedure

Participants were tested individually. They were randomly assigned to the mortality salience versus control condition by handing them out the questionnaire. Each questionnaire started with some general instructions followed by the mortality salience versus control induction. Participants had to read a short text with statistics about either cancer or hair loss and had to choose a proper treatment for it. Then, a short task in which participants had to judge geometric figures followed. This task was used to create a short delay between the mortality salience induction and the affect measurement like usual in terror management research (see Burke et al., 2010). In accordance with TMT, we created this delay so that participants were able to push death-related thoughts and fears out of mind which leads to a higher accessibility out of focal attention. After this short delay, the OMT was administered. At last, some demographic variables were recorded including questions about participants' awareness of the study's goals.

2.1.4 Results

We first summed all answers referring to the respective affect categories in the OMT and then carried out a multivariate analysis of variance, with condition (control condition vs. mortality salience) as the between-subjects factor and implicit anxiety, explicit anxiety, and positive affect as the dependent variables. We found a significant main effect of condition on implicit anxiety, $F(1, 128) = 4.24$, $p < .05$. As depicted in Figure 1, implicit anxiety was higher under mortality salience ($M = 5.32$, $SD = 1.73$) compared to the control condition ($M = 4.72$, $SD = 1.59$). There was no effect of condition on explicit anxiety, $F(1, 128) = 0.51$, ns. Explicit anxiety did not differ between mortality salience ($M = 3.09$, $SD = 1.94$) and control conditions ($M = 3.32$, $SD = 1.74$). Similarly, there was no effect of condition on positive

affect, $F(1, 128) = 1.69$, *ns*. Positive affect did not differ between mortality salience ($M = 4.35$, $SD = 1.741$) and control conditions ($M = 4.74$, $SD = 1.66$).
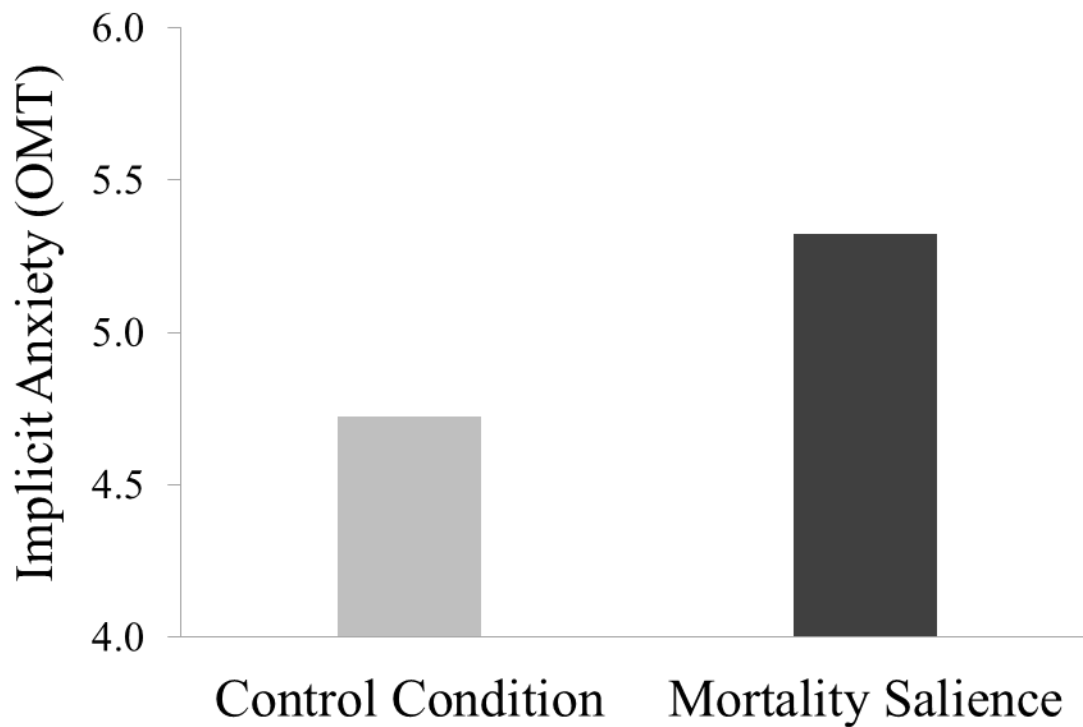
Figure 1: Implicit anxiety according to the Operant Motive Test (OMT; Kuhl & Scheffer, 1999) as a function of experimental conditions in Study 1.

2.1.5 Discussion

In Study 1, we found the expected effect of mortality salience on implicit anxiety. In the mortality salience group, implicit anxiety increased after a confrontation with death compared to the control group who had to think about hair loss. Explicit anxiety showed no increase under mortality salience compared to the control condition, which is a replication of

other findings (Solomon et al., 2004). However, these present results are limited by the one method to measures implicit negative affect, so we tried to replicate these results with a different method in Study 2.

2.2 Study 2

Study 2 was a replication of Study 1 aiming at detecting implicit anxiety under mortality salience with the Implicit Positive and Negative Affect Test (IPANAT; Quirin et al., 2009) in which participants judge the degree to which artificial words reflect an emotion like cheerful or helpless[2]. The general idea is that people imbue even nonsense words with their momentary (implicit) affect. Additionally, we assessed implicit anxiety versus implicit sadness.

2.2.1 Participants

One-hundred-ten participants (83 woman and 27 men) were recruited via internet for an online survey. Their age ranged from 19 to 78 years ($M = 24.04$, $SD = 6.72$). Data from ten participants were excluded from analysis because of their awareness of the research questions.

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[2] In a preliminary study (N= 50) the IPANAT was tested. This study revealed a marginally significant main effect of condition with higher rates of implicit negative affect in the mortality salience compared to the control condition. After this successful pre-test of the IPANAT, it was used in this larger sample to assess implicit negative affect.

2.2.2 Materials

2.2.2.1 Implicit Mood

In order to measure implicit negative affect, we used the Implicit Positive and Negative Affect Test (IPANAT; Quirin et al., 2009). In this questionnaire, five artificial words that had been pretested for a priori pleasantness, familiarity, semantic meaning, and associative value (SAFME, VIKES, TALEP, BELNI and FATEK) were each presented with positive and negative emotional words. Participants were told that the artificial words are intended to express various moods. In all languages, there are words that help to express their meanings by the way they sound (for example, the word *rattle* almost sounds like something that rattles). We presented the five artificial words with the three emotional words, happy [glücklich], sad [traurig] and anxious [ängstlich]. Participants answered on a 7-point scale to which extent each artificial word fits to the emotional adjectives, with 1 = *doesn't fit at all* and 7 = *fits very well*. Overall implicit positive affect and both implicit negative affective states were computed by averaging scores for each emotional word (e.g., happy) across artificial words. Internal consistencies were $\alpha = .62$ for happiness, $\alpha = .68$ for anxiety and $\alpha = .64$ for sadness.

2.2.2.2 Explicit Mood

A questionnaire containing 23 items describing mood was used to assess explicit affect. This adjective check-list also included items from the PANAS (Watson, Clark, & Tellegen, 1988; German Version: Krohne, Egloff, Kohlmann, & Tausch, 1996). The scales also included items like sad and anxious and had to be rated on a 4-point scale (1 = *not at all true of me*; 4 = *very much true of me*). Scores for each scale were computed by averaging the single item values. In the present sample, internal consistencies were $\alpha = .93$ for the positive affect scale and $\alpha = .81$ for the negative affect scale.

2.2.2.3 Mortality Salience Induction

Mortality salience was induced like in Study 1.

2.2.3 Procedure

Participants were tested in an online survey and were randomly assigned to the mortality salience or control condition. After some general instructions, participants received a package of questionnaires including the mortality salience and control induction, respectively, and measurements of implicit and explicit mood. Again, there was a short delay between the mortality salience induction and the affect measurement. In addition, implicit mood was assessed before the mortality salience or dental pain inductions as a baseline measure and after that short delay. In the end, participants' awareness of the aim of our study was assessed and ten participants had to be excluded due to their awareness that affect was measured.

2.2.4 Results

For descriptive data see Table 2.

Table 2

Summary of Means, Standard Deviations, and Intercorrelations in Study 2

	(2)	(3)	(4)	(5)	*M*	*SD*
(1) Explicit PA	-.40**	.09	.10	.02	2.44	0.80
(2) Explicit NA		-.14	.07	.11	1.32	0.57
(3) Implicit PA			.08	.15	3.64	0.77
(4) Implicit Anxiety				.65**	3.25	0.84
(5) Implicit Sadness					3.36	0.79

Note. Implicit affect was assessed with the Implicit Positive Affect and Negative Affect Test (IPANAT; Quirin, Kazén, & Kuhl, 1999). PA = Positive Affect; NA = Negative affect.

We conducted an analysis of covariance with condition (control condition vs. mortality salience) as the between-subjects factor and implicit anxiety after the induction (T2) as the dependent variable. We controlled for baseline implicit anxiety (T1) and duration to complete the survey. Consistent with expectations, there was a significant main effect of condition on implicit anxiety, $F(1, 95) = 3.88$, $p = .05$, with more anxiety in the mortality salience ($M = 3.33$, $SD = .84$) compared to the control group ($M = 3.19$, $SD = .83$). The finding is illustrated in Figure 2.
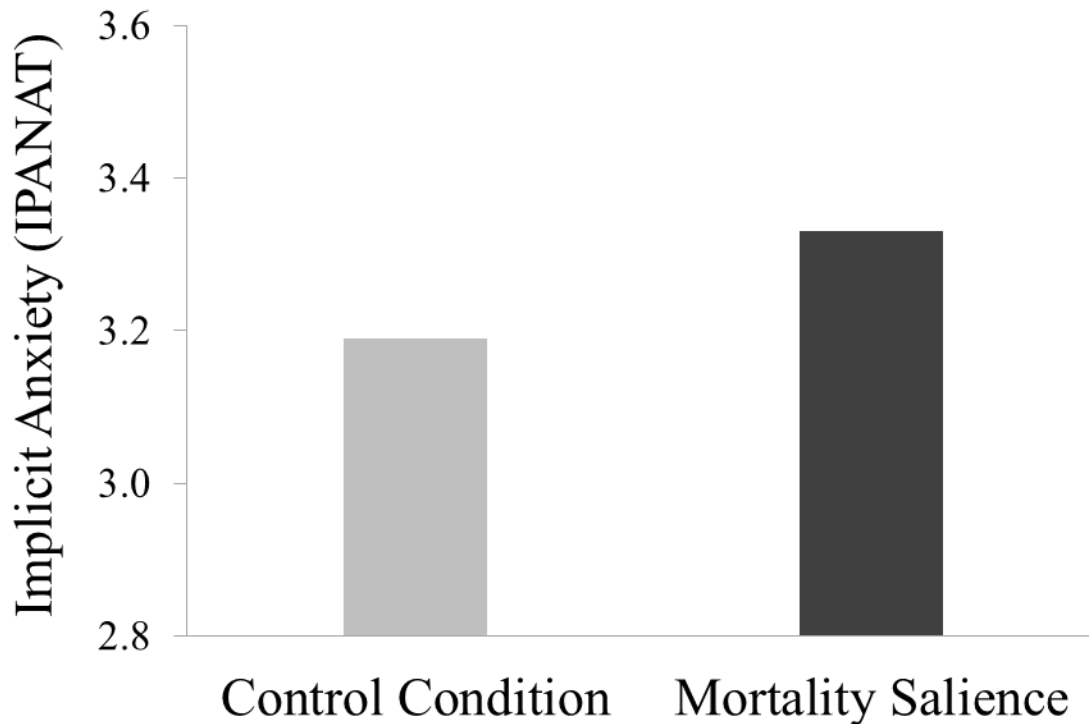
Figure 2: Implicit anxiety according to the Implicit Positive Affect and Negative Affect Test (IPANAT; Quirin et al., 1999) as a function of experimental conditions in Study 2.

In a similar analysis of implicit sadness, in contrast, there was no significant effect of condition, $F(1, 95) = .09$, $p = .77$, indicating that sadness did not differ between the mortality salience ($M = 3.49$, $SD = .75$) and control groups ($M = 3.24$, $SD = .85$). Finally, the analysis of implicit positive affect yielded no significant effect of condition, $F(1, 95) = .17$, *ns*, indicating that positive affect did not differ between the mortality salience ($M = 3.55$, $SD = .74$) and control groups ($M = 3.71$, $SD = .79$).

We conducted a multivariate analyses of variance with explicit mood ratings as dependent variables. Consistent with Study 1, there were no significant effects of condition on explicit negative affect, $F(1, 96) = .63$, *ns* (mortality salience: $M = 1.34$, $SD = .61$; control condition: $M = 1.3$, $SD = .55$), and explicit positive affect, $F(1, 96) = .08$, *ns* (mortality salience: $M = 2.43$, $SD = .88$; control condition: $M = 2.45$, $SD = .74$). When differentiating

explicit negative affect into the single-items of anxiety and sadness, there were no significant effects of condition for explicit anxiety, $F(1, 96) = 1.05$, *ns* (mortality salience: $M = 1.32$, *SD* = .67; control condition: $M = 1.22$, *SD* = .46), and explicit sadness, $F(1, 96) = 1.50$, *ns* (mortality salience: $M = 1.48$, *SD* = .82; control condition: $M = 1.35$, *SD* = .67).

2.2.5 Discussion

Study 2 was conducted to replicate findings of increased implicit anxiety under mortality salience with a different measure of implicit affect. Furthermore, we used the IPANAT to assess both implicit anxiety and implicit sadness at the same time whereas the OMT in Study 1 measured only the anxiety part of implicit negative affect. The increase in implicit negative affect under mortality salience was restricted to anxiety. Sadness did not differ due to the experimental condition. In line with terror management theory (Solomon et al., 2004), this finding indicates that implicit affective responses to reminders of death are specifically related to terror. We will elaborate on this issue below.

2.3 General Discussion

In two studies, we demonstrated the occurrence of implicit negative affect under mortality salience. Different previous results in terror management theory served as indirect support that reminders of death arouse anxiety, for example, the need to cope with cultural worldview defense when mortality is salient (e.g., Greenberg et al., 2001), the anxiety buffering effect of self-esteem which is inferred from reduced cultural worldview defense (for a meta-analysis see Burke et al., 2010), and even neural correlates of mortality salience

(Quirin et al., 2012). They all indicate that humans react with an emotional response to the confrontation with death.

However, this emotional response cannot be shown directly in questionnaires because it is assumed to be suppressed in focal attention. Our results support this assumption in three different ways. First, they do indeed reveal an emotional response by showing an effect of mortality salience on psychological measures of implicit negative affect. Second, we show that this effect is restricted to *implicit* affect and does not occur for explicit affect. Third, this affective reaction is restricted to implicit *anxiety* whereas mortality salience had no effect on implicit sadness.

In Study 1, we used the OMT to measure implicit anxiety. Participants thinking about a potentially deadly illness showed an increase in implicit negative affect compared to participants in the control condition who had to think about hair loss. Mortality salience showed no effect on explicit negative affect. In Study 2, we demonstrated the implicit affective reaction by using a short version of the IPANAT and differentiating between implicit anxiety and sadness. Whereas in Study 1, we assessed only the facet of implicit and explicit anxiety due to the OMT method, in Study 2, we decided to use the IPANAT to differentiate between anxiety and sadness by measuring both. Consistent with our expectations, this revealed distinct affective reactions towards death.

Mortality salience revealed a main effect only on implicit anxiety, supporting the assumption that death arouses terror and death-related fears in humans connected to the uncertainty and unpredictability associated with death (Solomon et al., 2004). In contrast, mortality salience had no effect on implicit sadness. This differential effect corresponds with the differentiation by Higgins (e.g., Higgins, Bond, Klein, & Strauman, 1986) between dejection-related emotions indicative of a lack of positive affect (e.g., sadness) and agitation-related emotions indicative of the presence of negative affect (e.g., anxiety). At least on an implicit level, people seem to be afraid of death rather than sad about their death. One can

speculate whether it has an evolutionary advantage to get into an anxious/agitated rather than sad/dejected state for the readiness to prevent potentially life-threatening dangers (e.g., by fight-flight or tend-and-befriend behaviors).

In sum, we showed the predicted affective reaction towards death by demonstrating implicit anxiety under mortality salience. These effects were stable across two different methods to measure implicit anxiety (OMT and IPANAT) and in contrast to other negative affective states like implicit sadness. The convergent findings across different methods increase our confidence in the findings.

2.4 Limitations and Future Perspectives

The present findings are a first demonstration of implicit anxiety under mortality salience as assumed by TMT. However, the results are limited in several ways. First, the differential effects of mortality salience on implicit anxiety versus sadness require extension to draw a broader picture of emotional reactions towards death. Second, we used two *projective* measures based on the idea that implicit affects infuse the interpretation of novel ambiguous stimuli (cf. Kaufmann & Baumann, in press). It would be informative to test whether findings replicate with more *associative* measures like the Implicit Association Test (IAT; Greenwald, McGhee & Schwarz, 1998) as well as with more *behavioural* measures like facial expressions (Ekman, Friesen & Hager, 2002) or vocal characteristics (Juslin & Scherer, 2005).

Finally, in future studies it would be informative to further validate our measures by showing that the implicit negative affect is the mediator behind classical effects of mortality salience on cultural worldview defenses. This could close the gap between research on death reminders in terror management theory and research on people with terminal illnesses. When psychotherapy with persons with limited lifetime focusses on coping of anxiety, for example,

by creating meaning in life and death, what would this intervention do to healthy persons under mortality salience? Would they profit from such an intervention although anxiety is only implicit and explicitly suppressed? Would it reduce the need for cultural worldview defense or would it worsen things by bringing implicit anxiety to explicit experience? These are open questions for further research.

2.5 Conclusion

In conclusion, our studies are among the first to provide direct evidence for implicit anxiety in response to mortality salience as assumed in terror management theory. Furthermore, our findings suggest that the OMT and the IPANAT are promising candidates for the measurement of implicit affect. As such, these instruments could contribute to the study of affective mechanisms in experimental existential psychology and research questions such as the ones listed above.

Chapter 3

When Death is not a Problem: Regulating Implicit Affect

under Mortality Salience

Abstract

Terror management theory assumes that death arouses existential anxiety in humans which is suppressed in focal attention. Whereas most studies provide indirect evidence for negative affect under mortality salience by showing cultural worldview defenses and self-esteem strivings, there is only little direct evidence for *implicit* negative affect under mortality salience. In the present study, we assume that this implicit affective reaction towards death depends on people's ability to self-regulate negative affect as assessed by the personality dimension of action versus state orientation. Consistent with our expectations, action-oriented participants judged artificial words to express less negative affect under mortality salience compared to control conditions whereas state-oriented participants showed the reversed pattern.

Keywords: Terror management, implicit negative affect, affect-regulation, action orientation.

Life's a laugh and death's a joke it's true.

 -Monty Python.

Not everyone can handle death with the sense of humor of Monty Python. In fact, it is a common assumption that death arouses existential anxiety in people. However, following terror management theory (Pyszczynski et al., 1999; Rosenblatt, et al., 1989; Solomon et al., 2004), this anxiety is suppressed in consciousness although it remains highly accessible out of focal attention (Arndt et al., 1997; Greenberg et al., 2001; Greenberg, Pyszczynski, Solomon, Simon & Breus, 1994). Even in the citation of Monty Python, death is rationalized and negative affect not mentioned or suppressed - as terror management theory would say. Especially distal coping strategies like cultural worldview defense (e.g., Arndt et al., 2005; Greenberg, Simon, Harmon-Jones, Solomon, Pyszczynski, & Lyon, 1995) are perceived as evidence that people try to cope with death-related anxiety that persists out of focal attention. However, until now direct evidence for death-related anxiety is rare although methods that measure implicit negative affect should reveal the affective reaction towards death. Additionally, one might wonder what effect the ability to self-regulate such anxiety has on implicit negative affect under mortality salience. In this study, we explore whether individual differences in the ability to self-regulate affect moderate implicit negative affect in response to mortality salience.

3.1 Terror Management and Affect

Terror management theory assumes that death-related negative affect is not experienced because it is suppressed from consciousness but remains at work unconsciously (Pyszczynski, et al., 1999). Consistent with this assumption, questionnaires failed to show an increase of negative affect like anxiety after a mortality salience induction (for an overview

see Solomon et al., 2004). However, indirect evidence for implicit negative affect is cultural worldview defense, as it is understood as the attempt to cope with negative affect out of focal attention. It is assumed that the symbolic immortality one may gain through identifying with a persisting culture may outweigh the anxiety connected to the individual death (Dechesne et al., 2003; Greenberg et al., 2000; Solomon et al., 2004).

Furthermore, the anxiety-buffering effect of self-esteem - especially high implicit self-esteem - is considered as evidence for the presence of implicit anxiety (e.g., Burke et al., 2010; Greenberg et al., 1992; Hayes et al., 2008). For example, Schmeichel and colleagues (2009) demonstrated less cultural worldview defense if people had high implicit self-esteem on a trait level or if implicit self-esteem was boosted by a positive personality feedback. It is assumed that high (implicit) self-esteem buffers death-related anxiety so that people have no need to cope with mortality salience by later cultural worldview defense.

In addition to this indirect evidence, neural correlates demonstrate the affective reaction towards death (Quirin et al., 2012). Finally, Lüdecke and Baumann (under review) demonstrated an increase of implicit anxiety under mortality salience. They demonstrated that, compared to control conditions, participants under mortality salience wrote significantly more stories referring to implicit anxiety in the Operant Motive Test (OMT; Kuhl & Scheffer, 1999) and judged artificial words to express more anxiety in the Implicit Positive and Negative Affect Test (IPANAT; Quirin et al., 2009). These studies demonstrated the presence of affective reactions after reminders of death. However, research on the modulation of such affective reactions through individual differences in affect-regulation is still missing.

3.2 Affect-Regulation under Mortality Salience

Several studies investigated individual differences that help people to cope with death-related anxiety. Gailliot and colleagues (2006) have shown that high trait self-control helped

to suppress death-related thoughts and resulted in less cultural worldview defense compared to low trait self-control. Ferraro et al. (2005) demonstrated that self-control was an important skill in defending aspects of the self that were an important source of explicit self-esteem.

People do not only differ in their ability to suppress or consciously control negative affect but also in their ability to regulate affect intuitively (Koole & Jostmann, 2004). Intuitive affect regulation is defined as a flexible, efficient, and nonrepressive control of own affective states and assessed by the personality dimension of action versus state orientation (Baumann et al., 2007; Baumann & Kuhl, 2002; Kuhl, 1994). Koole and Jostmann (2004), for example, demonstrated that action-oriented individuals were able to down-regulate negative affect intuitively whereas state-oriented individuals suffered under demanding conditions because they were not able to self-regulate negative affect. In their studies, action orientation was distinct from other emotion regulation strategies such as reappraisal and suppression (cf. Gross & John, 2003) and supported by increased accessibility to the implicit self.

In studies in the realm of terror management theory, action-oriented participants have been found to overcome the intrinsic association between death and wilderness more often than state-oriented participants (Koole & Van den Berg, 2005). Further evidence that action orientation shapes the nature of people's coping with mortality salience has been obtained by Kazén and colleagues (2005) in a student sample in Germany. In this cultural context, in which, for historical reasons, national pride is judged negatively, only action-oriented participants were able to utilize national pride as a coping strategy for dealing with mortality salience. Taken together, the findings are first clues that action and state orientation differentially cope with mortality salience.

3.3 Present Study

In the present study, we aimed at integrating the approaches reviewed above. Therefore, we explored the effects of high versus low affect-regulation skills on implicit negative affect under mortality salience. We assumed that people with high affect-regulation skills (action orientation) experience less implicit negative affect under mortality salience than people with low affect-regulation skills (state orientation). Because self-esteem has been proposed to buffer death-related anxiety (e.g., Greenberg et al., 1992; Greenberg et al., 1993; Hayes et al., 2008), we controlled for self-esteem in our study.

3.3.1 Participants

Sixty high school students (37 female and 23 male) voluntarily participated in the experiment. Their age ranged from 15 to 18 years ($M = 15.94$; $SD = 0.76$). Data from five participants were excluded from analyses because of incomplete questionnaires.

3.3.2 Materials

3.3.2.1 Self-Esteem

The German translation of Rosenberg's Self- Esteem Scale (Ferring & Filipp, 1996; Rosenberg, 1965) was administered to assess self-esteem. Participant rated their agreement to ten statements ($\alpha = .81$) on a 4-point scale (1 = *not at all true of me*; 4 = *very strongly true of me*). Item scores were summed up to calculate overall self-esteem.

3.3.2.2 Action Orientation

The Action Control Scale (*ACS-90*; Kuhl, 1994) was administered to assess action versus state orientation. For the present purpose, action versus state orientation after failure (AOF) was relevant because it assesses the high versus low ability to self-regulate negative affect. An example item is: *"When I am told that my work has been completely unsatisfactory: (a) I don't let it bother me for too long, or (b) I feel paralyzed"*. Whereas option "a" reflects action orientation, option "b" reflects state orientation. The scale consists of twelve items (α = .65; for further information on reliability and validity see Diefendorff et al., 2000; Kuhl & Beckmann, 1994). For an overall score of action orientation, all action-oriented responses were summed up. As there was a skewed distribution, we tested for normal distribution. The Kolmogorov-Smirnov-Test was significant (*statistic* = .131, *df* = 57, *p* < .02) indicating a significant deviation from a normal distribution. Therefore, we dichotomized the scale using the common norms with scores of 0-4 indicating low action orientation (i.e., state orientation) and scores of 5-12 indicating high action orientation (Kuhl, 1994).

3.3.2.3 Explicit Mood

To assess explicit affect, we used a 23-item adjective check-list, including items from the PANAS (Watson et al., 1988; German Version: Krohne et al., 1996). Scales for positive affect (α = .89) and negative affect (α = .70) consisted of three items, respectively, to be rated on a 4-point scale (1 = *not at all true of me*; 4 = *very strongly true of me*). Item scores were averaged to calculate overall positive and negative affect.

3.3.2.4 Implicit Mood

To assess implicit affect, we used the Implicit Positive and Negative Affect Test (IPANAT; Quirin et al., 2009) in which five artificial words (SAFME, VIKES, TUNAB,

TALEP, and SUKOV) were each presented with positive and negative emotional words. The general idea is that people imbue even nonsense words with their momentary (implicit) affect. Instructions explained that the artificial words are intended to express various moods and that in many cases words sound like the object they describe (for example, the word *rattle* almost sounds like something that rattles). We presented the five artificial words with three positive (cheerful [gutgelaunt], happy [fröhlich] and energetic [aktiv]), and three negative emotional words (helpless [hilflos], tense [verkrampft] and inhibited [gehemmt]), respectively. Participants indicated on a 6-point scale to which extent each artificial word fits to the emotional adjectives (1 = *doesn't fit at all;* 6 = *fits very well*). The artificial words had been pretested for a priori pleasantness, familiarity, semantic meaning, as well as associative value. Overall implicit positive affect ($\alpha = .76$) and implicit negative affect ($\alpha = .85$) were computed by averaging scores for each emotional word (e.g., cheerful) across artificial words and then averaging scores across all positive and negative emotional words, respectively.

3.3.3 Procedure

Participants were tested in groups. They were randomly assigned to the mortality salience versus control condition. The investigator ensured privacy and explained that the aim of the study was to investigate relationships between personality traits and feelings in different situations. After some general instructions, the questionnaire started with an assessment of baseline implicit affect, action orientation, and self-esteem. Next, mortality salience was induced by the commonly used death-questionnaire by Rosenblatt and colleagues (1989): *Please briefly describe the emotions that the thought of your own death arouses in you*, and *Please describe, what you think will happen to you as you die and once you are dead*. Participants in the control condition answered the same questions concerning

dental pain. This was followed by the assessment of explicit affect, a word-stem completion task indicating the accessibility of death-related thoughts, and a second assessment of implicit affect. Finally participants were debriefed, thanked for their participation, and dismissed.

3.3.4 Results

Descriptive data and correlations are provided in Table 3.

Table 3

Summary of Means, Standard Deviations, and Intercorrelations

	(2)	(3)	(4)	(5)	(6)	(7)	*M*	*SD*
(1) Action Orientation	.34*	.15	-.02	.12	-.24	-.12	3.67	2.69
(2) Self-esteem		.14	-.12	.45**	-.43**	-.19	28.94	4.47
(3) Implicit Positive Affect			-.02	.14	-.02	-.01	3.35	.64
(4) Implicit Negative Affect				-.17	.16	.23	2.83	.69
(5) Explicit Positive Affect					-.38**	-.22	2.20	.70
(6) Explicit Negative Affect						.34*	1.62	.66
(7) Death-thought Accessibility							1.64	1.39

Note. Implicit and explicit affect are post-induction measures.

* $p < .05$; ** $p < .01$

In our sample, we found a significant correlation between death-thought accessibility and explicit negative affect, $r = .34$, $p < .05$, which is unusual and discussed later on. A partial correlation of explicit negative affect and death-thought accessibility controlling for condition and action orientation remained significant, $r = .33$, $p < .05$, indicating that, independently from condition and personality, higher explicit negative affect was associated with higher death-thought accessibility.

3.3.4.1 Manipulation Check: Death-Thought Accessibility

As a manipulation check, we conducted a 2 (Condition: control vs. mortality salience) x 2 (Personality: state vs. action orientation) analysis of variance (ANOVA) with death-thought accessibility as a dependent variable. Consistent with the literature, the analysis revealed a significant main effect of condition, $F(1, 51) = 7.40$, $p > .01$, with higher death-thought accessibility under mortality salience ($M = 2.07$, $SD = 1.52$) compared to control conditions ($M = 1.21$, $SD = 1.13$). This indicates a successful manipulation of mortality salience. Action orientation did not have a significant main effect on death-thought accessibility, $F(1, 51) = 0.80$, ns. Furthermore, the Condition x Personality interaction was not significant, $F(1, 51) = 1.89$, ns., indicating that the manipulation was equally successful for action- and state-oriented participants. As depicted in Figure 3, on a descriptive level, the increase in death-thought accessibility under mortality salience was even stronger among action-oriented (mortality salience: $M = 2.38$, $SD = 2.20$; control condition: $M = .78$, $SD = .83$) compared to state-oriented participants (mortality salience: $M = 1.94$, $SD = 1.18$; control condition: $M = 1.42$, $SD = 1.22$).
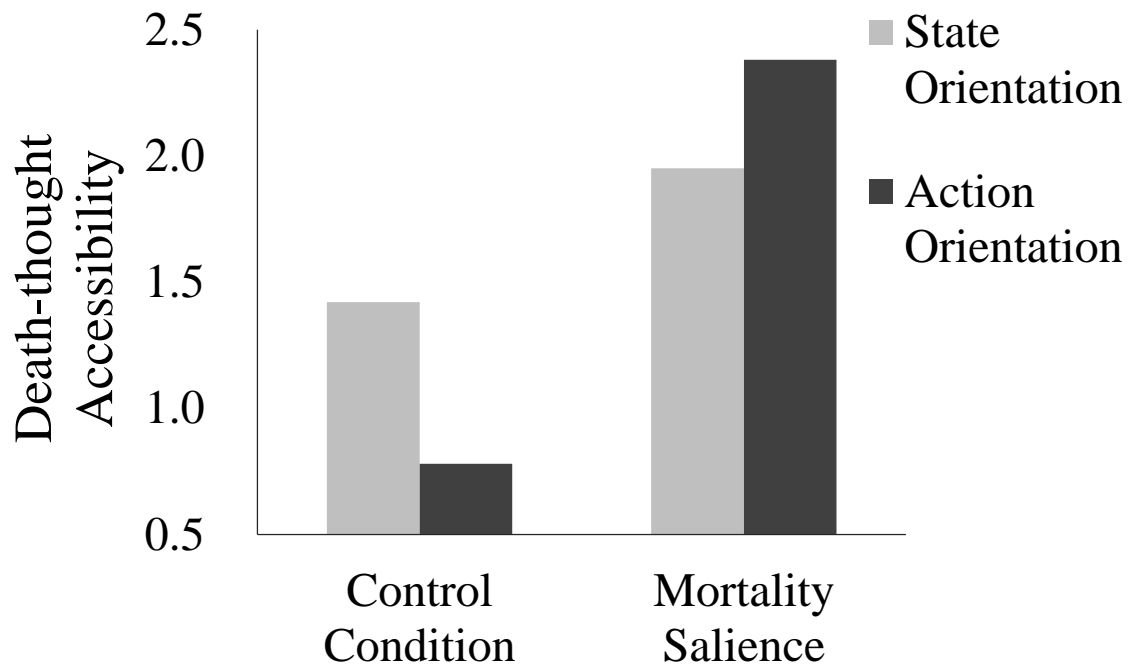
Figure 3: Death-thought accessibility (i.e., number of death-related words-stems) as a function of experimental condition and action orientation.

3.3.4.2 Implicit Affect

In order to analyze effects of mortality salience and action orientation on implicit negative affect, we conducted a 2 (Condition: control vs. mortality salience) x 2 (Personality: state vs. action orientation) analysis of covariance (ANCOVA) with baseline implicit negative affect as a covariate. The analysis revealed that there were no significant main effects of condition, $F(1, 50) = .49$, *ns*, and action orientation, $F(1, 50) = .22$, *ns*. Consistent with expectations, the analysis revealed a significant Condition x Personality interaction, $F(1, 50) = 5.40$, $p > .05$. As depicted in Figure 4, state-oriented participants had higher implicit negative affect under mortality salience ($M = 3.00$, $SD = .70$) compared to control conditions ($M = 2.72$, $SD = .55$). Action- oriented participants, in contrast, had lower implicit negative affect under mortality salience ($M = 2.63$, $SD = .89$) compared to control conditions ($M =$

2.90, $SD = .56$). The interaction effect remained stable when controlling for self-esteem, $F(1,$

$46) = 5.07, p > .05$.
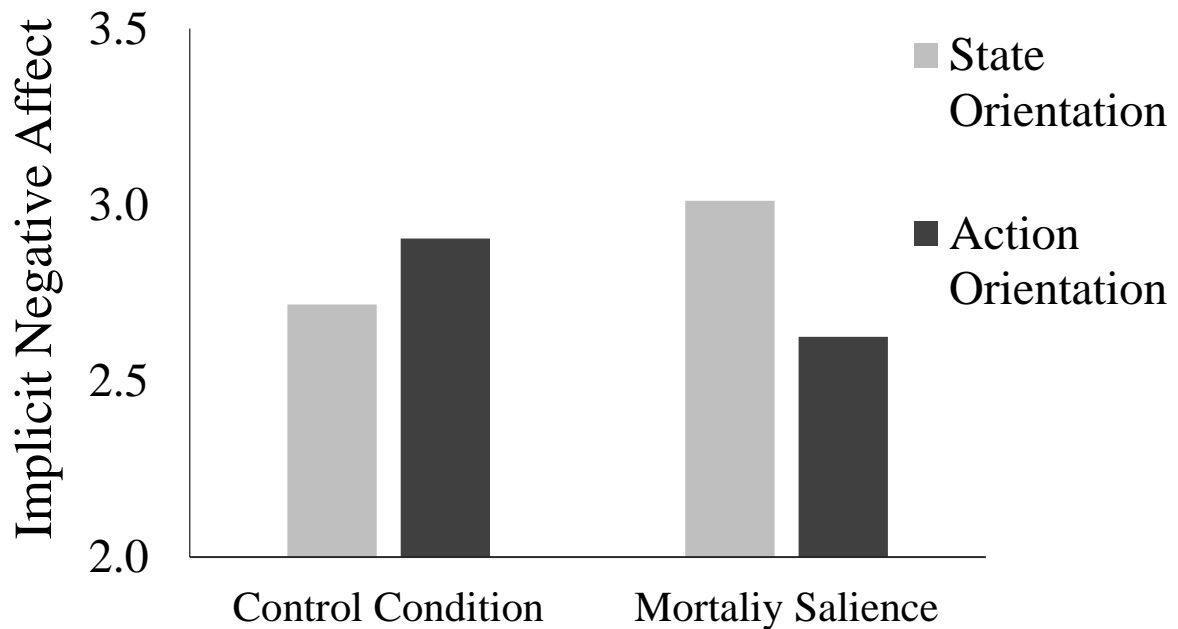
Figure 4: Implicit negative affect in the IPANAT (Quirin et al., 2009) as a function of

experimental condition and action orientation.

In a similar ANCOVA on implicit positive affect, there was no Condition x

Personality interaction, $F(1, 50) = .06$, *ns.* State-oriented participants did not differ in implicit

positive affect under mortality salience ($M = 3.42$, $SD = .62$) and control conditions ($M =$

3.34, $SD = .76$). Action-oriented participants did also not differ in implicit positive affect

under mortality salience ($M = 3.35$, $SD = .73$) and control conditions ($M = 3.24$, $SD = .36$).

3.3.4.3 Explicit Affect

We conducted a multivariate analysis of variance (MANOVA) with condition and personality as independent variables and explicit mood ratings as dependent variables. The results for explicit negative affect revealed no significant main effects of condition, $F(1, 51) = .54$, *ns*, and action orientation, $F(1, 51) = .59$, *ns*. Furthermore, there was no significant Condition x Personality interaction, $F(1, 51) = .14$, *ns*. Again, state-oriented participants did not differ in explicit negative affect under mortality salience ($M = 1.72$, $SD = .72$) and control conditions ($M = 1.63$, $SD = .67$). Similarly, action- oriented participants did not differ in explicit negative affect under mortality salience ($M = 1.63$, $SD = .81$) and control conditions ($M = 1.41$, $SD = .40$).

The results for explicit positive affect revealed no significant main effects of condition, $F(1, 51) = .26$, *ns*, and action orientation, $F(1, 51) = .96$, *ns*. Furthermore, there was no significant interaction effect, $F(1, 51) = 1.04$, *ns*. State-oriented participants did not differ in explicit positive affect under mortality salience ($M = 2.09$, $SD = .74$) and control conditions ($M = 2.19$, $SD = .69$). Similarly, action-oriented participants did not differ in explicit positive affect under mortality salience ($M = 2.50$, $SD = .80$) and control conditions ($M = 2.19$, $SD = .58$).

3.4 Discussion

The present study was conducted to uncover the presumably implicit affective responses to mortality salience and to explore their modulation through affect-regulation skills. Our study yielded the following results. First, we demonstrated that there is indeed an affective response to reminders of death on an implicit level. Whereas cultural worldview defense is conceived as a distal coping strategy and, thus, offers indirect evidence for the

presence of negative affect under mortality salience, we were able to grasp this implicit anxiety more directly with an implicit negative affect test.

Second, we showed that this affective reaction is moderated by individual differences in the ability to self-regulate negative affect. Whereas other studies (Gailliot, et al., 2006; Kazén et al., 2005) already demonstrated the effects of affect-regulation skills on coping strategies like cultural worldview defense, we showed that the differences in affect-regulation actually influence the affective reaction towards death itself. We found implicit negative affect to increase under mortality salience, however, only among participants who are unable to self-regulate negative affect: State-oriented participants showed increased negative affect under mortality salience (vs. control) conditions as indicated by their higher tendency to judge artificial words as expressing negative affect. Action-oriented participants, in contrast, showed even lower implicit negative affect under mortality salience (vs. control) conditions which is in line with other findings (Koole, Jostmann, & Baumann, 2012). Thus, we demonstrated that personality differences in the ability to self-regulate negative affect moderate the implicit anxiety aroused by a confrontation with death – a situation typically conceived of as highly threatening (Burris & Rempel, 2004; Pyszczynski et al., 1999; Van den Bos, 2009).

Third, in addition to affective responses, we explored the cognitive responses of participants under mortality salience. In the analysis of death-related thoughts, the interaction between condition and personality failed to reach significance and was descriptively in the opposite direction. This shows that self-regulatory skills exclusively impact affective but not cognitive responses towards death. The finding that action orientation was associated with reduced implicit negative affect while leaving death-related thoughts unaffected (or descriptively even increased) further supports the conceptualization of action orientation in terms of a non-repressive, self-confrontational way of coping. Action-oriented participants

confronted themselves with the source of anxiety (i.e., death-related thoughts) and efficiently regulated the implicit affective response.

Finally, we found a significant correlation between explicit negative affect and death-thought accessibility. Whereas other studies either do not report correlations between explicit affect and death-thought accessibility (e.g., Greenberg et al., 2001; Routledge, Arndt, Sedikides, & Wildschut, 2008) or reveal nonsignificant correlations (Hayes, Schimel, Arndt, & Faucher, 2010; Schimel, Hayes, Williams, & Jahrig, 2007), we found explicit negative affect to be associated with significantly higher death-thought accessibility. This correlation occurred independently from personality and condition. Previous studies revealed that, in addition to death-reminders, various other kinds of threat may also increase death-thought accessibility. For example, self-esteem threats have been shown to increase death-thought accessibility (Hayes et al., 2008) and death-anxiety as measured by an explicit questionnaire (Routledge, 2012). Our result may reflect this picture.

3.5 Limitations and Future Perspectives

Certainly, this study is limited in several ways. First, we tested a restricted sample of high school students with an average age of 16 years. In most studies on terror management, samples typically consist of college students (see Burke et al., 2010). Although they share several aspects with our sample like youth, health, and low experience with death and dying, a replication with an older sample would be useful. Second, we assessed implicit affect only with the IPANAT (Quirin et al., 2009) because it is a relatively short, reliable, and valid instrument. Nevertheless, a replication of our results with associative, behavioral, or other projective measures of implicit affect is needed (for an overview of implicit measures see Kaufmann & Baumann, in press). Third, we did not explore the relationship between implicit negative affect and cultural worldview defense. We would expect higher implicit negative

affect to be associated with a higher need for cultural worldview defense. Therefore, in future studies, it would be informative to include measures of worldview defense.

Finally, an additional question is whether there are contexts that help state-oriented individuals to regulate the implicit negative affect aroused by death. Whereas action-oriented individuals are able to regulate affect on their own, state-oriented individuals may benefit from external regulation through social support and relatedness (Chatterjee, Baumann, & Osborne, 2013; Koole & Jostmann, 2004). Several studies already demonstrated the anxiety-buffering effect of close relationships (Florian et al., 2002; Hirschberger, Florian, & Mikulincer, 2003; Taubman-Ben-Ari, Findler, & Mikulincer, 2002). Our present findings suggest that these buffers are especially important for state-oriented individuals and, thus, extend the research on the effects of close relationships for coping with death.

3.6 Conclusion

Although it is a common assumption that death arouses anxiety, Monty Python encourages people to laugh about death. Terror management theory would assume that this is a rationalization that suppresses death-related anxiety out of consciousness but maintains it on an implicit level. Our results support this assumption – albeit only for state-oriented people because they have low affect-regulation skills. Referring to the quotation of Monty Python, action-oriented people can truly laugh about death because they are able to self-regulate negative affect – even on an implicit level.

Chapter 4

Being Oneself in the Face of Death: Self-Access under

Mortality Salience

Abstract

The present research explored the role of self-regulation in dealing with mortality salience (MS). We focused on action versus state orientation that captures individual differences in the capacity to cope through the self. In four studies, we tested the hypothesis that action-oriented participants react to MS by increasing access to the self (i.e., implicit representations of own needs, wishes, goals, and preferences) whereas state-oriented participants lose access to the self. Under MS conditions, action-oriented participants (compared to state-oriented participants and/or control conditions) showed increased self-access as indicated by higher congruence between implicit and explicit motives (Study 1), lower self- infiltration (Study 2), and higher stability in repeated preference judgments of trait adjectives (Studies 3 & 4) and Chinese symbols (Study 4). The effects occurred over and above of self-esteem. Findings are consistent with the assumption that action orientation is the capacity to cope through the self.

Keywords: state versus action orientation, intuitive self-regulation, terror management, motive congruence, self-access

Imagine you are walking together with a colleague to a meeting of a scientific society in which they will offer you a prestigious albeit busy position. On the way, you happen to talk about the death notice of one of the pioneers in your field and discuss preferences for your own funeral. Do you think this reminder of your own mortality will influence how much your choice pro or against the position in the scientific society is in line with your implicit needs, wishes, goals, and preferences? We expect the personality disposition of state versus action orientation (i.e., low versus high self-regulation) to moderate access to implicit self-representations under mortality salience and, thus, the nature of coping processes.

4.1 Self-Esteem and Self-Access

According to terror management theory (TMT), death is the ultimate threat to the self (Greenberg et al., 1986; Pyszczynski et al., 1999). Humans try to avoid existential fears aroused by reminders of death by defending their cultural worldview and striving for self-esteem. Consistent with the assumed anxiety buffering effect of self-esteem, research demonstrates that high self-esteem reduces cultural worldview defenses (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). Recent findings (Schmeichel et al., 2009) and meta-analyses (Burke et al., 2010) differentiate this view by showing that the anxiety buffering effect is restricted to *implicit* dispositional self-esteem and subtle experimental inductions of self-esteem.

People do not only differ in the content (e.g., positivity) of the implicit self, but also in the ability to access self-related information such as implicit representations of own needs, wishes, goals, and preferences under threatening conditions. Whereas state-oriented people lose access to the self, action-oriented people have increased access to self-related information under stress (e.g., Koole & Jostmann, 2004; Kuhl & Beckmann, 1994b). Because the self is a strong agent of emotion regulation (Koole, 2009; Kuhl, 2000; Showers & Kling,

1996), being able to access this volitional resource under mortality salience would give rise to a distinct, self-reliant way of coping.

Although TMT often highlights the unique impact of mortality salience (Greenberg et al., 1986; Pyszczynski et al., 1999), there is a growing understanding that mortality salience is not as unique a threat as we once thought (e.g., McGregor, Nash, & Inzlicht, 2009; van den Bos, 2009). We assume that the ways action-oriented people respond to mortality salience does not differ from the ways they respond to other stressors examined in the past (e.g., social pressure, threatening life circumstances, negative emotions). Thus, our paper offers an incremental extension of the work on action orientation by testing whether the heightened access to the self that facilitates emotion regulation for action-oriented people extends to mortality salience. To test our self-access assumption, we need a clear definition of the self.

Since the seminal work by William James (1890), researchers agree that self-concepts (e.g., explicit self-esteem) are cognitive representations of the self that need to be distinguished from the entity (self) they refer to. According to the theory of personality systems interactions (PSI; Kuhl, 2000, 2001), the self is defined as a central executive system operating on parallel-distributed processes (Read, Vanman, & Miller, 1997; Rumelhart, McClelland, & the PDP Research Group, 1986) and providing an overview of extended semantic networks (Beeman et al., 1994), implicit self-representations (Greenwald & Banaji, 1995), and autobiographical memories (Wheeler, Stuss, & Tulving, 1997). Access to this large network system makes a great number of preferences and action alternatives simultaneously available so that a person can choose goals that satisfy multiple constraints and easily feel priorities.

4.2 Action Orientation and Self-Access

The personality disposition of (threat-related) action versus state orientation (Kuhl, 1994a) captures individual differences in the *self*-regulation of negative affect, that is, the high versus low ability to down-regulate negative affect once it is aroused, to disengage from intrusive thoughts, and to maintain (or compensatory increase) access to the self. Typically, there is a crossover interaction of action orientation and stress (Koole, Jostmann, Baumann, 2012; Kuhl & Beckmann, 1994b): Under stressful conditions, state-oriented participants are *not able* to self-regulate stress and show significant impairments in self-access, performance, and well-being compared to action-oriented participants. Under relaxed conditions, in contrast, action-oriented participants are *not motivated* to unfold their full self-regulatory potential and show poorer outcomes than state-oriented participants. In the following, we review findings that qualify as (inverse) indicators of self-access: motive discrepancies, self-infiltration, and instability in repeated preference judgments.

Several studies demonstrated that the ability to set explicit goals in line with implicit motives is an important predictor of well-being (Brunstein, Schultheiss & Grässmann, 1998, Kazén & Kuhl, 2011, Schüler et al., 2009), whereas discrepancies between implicit and explicit motives were associated with volitional depletion (Kehr, 2004) and unhealthy eating behavior (Job et al., 2010). Brunstein (2001) found that commitment to motive-discrepant goals was stronger among state- compared to action-oriented individuals. Baumann and colleagues (2005), further qualified this main effect: state-oriented participants did not show increased motive discrepancies unless there was some kind of threat present in the natural life circumstances or experimentally induced (e.g., by imagery of a threatening vs. accepting person). Furthermore, motive discrepancies mediated the stress-contingent health decrements in state-oriented participants. Action-oriented individuals, in contrast, regulated emotions by increasing access to the self.

Kuhl and Kazén (1994a) introduced source memory errors as an indicator of self-infiltration. In their studies, participants were to select some tasks for later enactment from a longer list of activities. The experimenter assigned them some additional tasks. Other tasks remained unchosen (neither self-selected nor assigned). In an unexpected memory task, participants were to classify whether they had previously selected the task or not. State-oriented participants mistakenly ascribed external assignments more often as self-selected goals compared to the baseline of remaining tasks. The effect is indicative of self-infiltration rather than identification with social expectations because it was restricted to unattractive tasks (Kazén, Baumann, & Kuhl, 2003), positively correlated with the stress hormone cortisol at baseline and after an acute stressor (Quirin, Koole, Baumann, Kazén, & Kuhl, 2009), and negatively correlated with flow (Baumann & Scheffer, 2011). Furthermore, self-infiltration was increased among state- and reduced among action-oriented participants in response to stressors such as natural and induced negative mood (Baumann & Kuhl, 2003), external pressure, and task alienation (Kazén, et al., 2003).

Finally, Kuhl and Beckmann (1994a) used low stability in repeated preference judgments to assess latent alienation: an impaired ability to perceive one's emotional preferences and to form valid (implicit or explicit) representations of them. A methodological challenge was the valid assessment of "true" emotional preferences when, according to the theory, they are inhibited. A first approximation was the idea that latent alienation is not chronically active in people and less so under relaxed conditions. Therefore, Kuhl and Beckmann (1994a) assessed preferences under neutral conditions (t1) and repeated the judgments under either stressful or neutral conditions (t2). In several studies, state-oriented participants had lower whereas action-oriented participants had higher stability under stressful compared to neutral conditions (Baumann, 1998; Guevara, 1994; Koole et al., in press; Kuhl & Beckmann, 1994a).

Taken together, the reviewed literature provides reliable and valid measures of self-access. There is strong evidence that action-oriented participants access the self under stressful conditions. Some findings further support self-access as the mediating process in action-oriented emotion regulation (Baumann et al., 2005; Koole & Jostmann, 2004). However, we are not aware of a study testing whether this distinct coping process extends to mortality salience.

4.3 Action Orientation and Mortality Salience

Previous studies in the realm of TMT suggest that action orientation shapes the nature of people's coping with mortality salience. Koole and Van den Berg (2005), for example, unraveled an intrinsic association between wilderness and death: Wilderness elicited more death-related thoughts than cultivated nature and death reminders reduced the perceived beauty of wilderness. Action-oriented participants tended to suppress this association and to highly value the beauty of wilderness unless they were directly primed with death-related thoughts. State-oriented participants, in contrast, showed relatively lower appreciation of wilderness across conditions that did not increase any further through direct death priming. These differential effects for state- and action-oriented participants indicate distinct coping processes.

Kazén and colleagues (2005) investigated mortality salience effects on national price in Germany – a country in which feelings of national pride elicit many negative associations related to the Nazi era. Action-oriented participants tended to reduce this overall negative evaluation of national pride and attributes related to their own culture under mortality salience whereas state-oriented participants showed further devaluation. The effects of action orientation were stable when controlling for explicit self-esteem and did not occur for participants with high (or low) self-esteem. Similar to Koole and Van den Berg (2005), findings indicate distinct coping processes among state- and action-oriented participants.

Furthermore, defending national pride within this cultural context may require access to a broader associative network system that is capable of integration multiple and even contradictory information. Although the self qualifies for such integrative processes, a more direct evidence that action-oriented participants access the self under mortality salience is still missing.

In four studies, we tested the assumption that action-oriented participants access the self under mortality salience whereas state-oriented participants lose self-access. More specifically, we hypothesized that action-oriented participants show heightened self-access as indicated by lower motive discrepancies (Study 1), lower self-infiltration (Study 2), and lower instability in repeated preference judgments (Studies 3 & 4) under mortality salience compared to control conditions and/or state-oriented participants.

4.4 Study 1

4.4.1 Participants

Sixty-three psychology undergraduates (53 women) from the University of Osnabrück, Germany, voluntarily participated in the experiment. They received course credit in return for their participation. Their mean age was 24 years (range 18 to 44 years).

4.4.2 Materials

4.4.2.1 Action Orientation

Action orientation was assessed with the threat/failure-related dimension of the Action Control Scale (ACS-90; Kuhl, 1994b) which describes the ability to down-regulate negative affect. The scale consists of 12 items ($\alpha = .80$). An example item is *"When I am told*

that my work has been completely unsatisfactory: (a) I don't let it bother me for too long, or (b) I feel paralyzed". In this example, option "a" reflects the action-oriented response alternative and option "b" the state-oriented response alternative. Note that items do not require any conscious insight into the regulatory process itself but focus on observable outcomes of high versus low self-regulation. Thus, the explicit assessment is compatible with the assumption of intuitive self-regulation processes. All action-oriented response alternatives were summed so that the scale ranged from 0 to 12, with lower scores indicating lower action orientation (i.e., state orientation) and higher scores indicating higher action orientation.

4.4.2.2 Self-Esteem

The German translation (Ferring & Filipp, 1996) of Rosenberg's Self-Esteem Scale (Rosenberg, 1965) with 10 items ($\alpha = .87$) was applied. Responses were made on a 4-point scale (1 = *not at all true of me*; 4 = *very strongly true of me*). Self-esteem was calculated as the mean across items.

4.4.2.3 Implicit Motives

The Operant Motive Test (OMT, Kuhl & Scheffer, 1999) was administered to assess the implicit needs for affiliation, achievement, and power. It is a widely used and well accepted measure for implicit motives (e.g., Baumann et al., 2005; Job, et al., 2010; Kazén & Kuhl, 2011; Schüler et al., 2009). Using a modified TAT (thematic apperception test) technique, we presented participants with 15 pictures and asked them to invent a story (without having to write down the story) and give their spontaneous associations to the following questions: (a) *What is important for the person in this situation and what is the person doing?,* (b) *How does the person feel?,* (c) *Why does the person feel this way?,* and (d) *How does the story end?.* Scoring was carried out by well-trained assistants who had attained

sufficient interrater agreement (> .85) across several studies. They were unaware of participants' experimental condition and the study hypothesis. The following contents were coded for *affiliation*: a) intimacy, relatedness, affective sharing, b) sociability, extraverted contact; c) coping with rejection, networking, d) affiliation, feelings of security; *achievement*: a) flow, curiosity, b) inner standards, c) coping with failure, d) pressure to achieve, social standards; *power*: a) guidance, helping others, b) status, receiving recognition, c) coping with power-related threats, d) dominance, inhibited power. No correction for length of protocol was necessary because there is only a dichotomous coding for each motive (0 = not present, 1 = present) for each picture of the operant motive test. Further information on the scoring procedure and validation of the operant motive test is reported in Scheffer (2005) and Scheffer et al. (2003) as well as in Baumann et al. (2005), Baumann et al. (2010), and Kuhl, Scheffer, and Eichstaedt (2003).

4.4.2.4 Explicit motives

The Motive Enactment Test (MET, Kuhl, 1999) was used to assess the explicit (self-attributed) needs for affiliation (*"I enjoy meaningful exchanges with other people"*), achievement (*"Once I have solved a difficult task I am on to the next challenge"*), and power (*"I often provoke arguments with others"*) as well as four (integrative, intuitive, controlled, and anxious) strategies for enacting the three needs, respectively. The 15 (3 dominance, 12 strategy) scales consisted of 4 items each to be rated on a 4-point scale (0 = *not at all true of me*; 3 = *very much true of me*). Whereas explicit affiliation ($\alpha = .72$) and explicit achievement motives ($\alpha = .77$) had sufficient internal consistency, the explicit power motive ($\alpha = .29$) was unreliable. Therefore, we aggregated across the three non-anxious (integrative: *"I feel that most of the time I can speak my mind"*; intuitive: *"I often convey superiority"*; controlled: *"When it comes to being in power, I always go for the top position"*) strategies for enacting

power needs as an alternative indicator of the explicit power motive ($\alpha = .80$) and used this throughout the subsequent analyses.

4.4.3 Procedure

Participants were tested individually. They started by working on the operant motive test and proceeded with the action orientation and self-esteem scales. Next, participants were randomly assigned to one of the two experimental conditions. Participants in the *mortality salience condition* were asked to imagine what happens to their body when they die and to describe, as detailed as possible, the feelings and thoughts that arise when imagining their own death. Participants in the *cinema control condition* were asked to imagine what goes on in their body when they watch a movie at the cinema and to describe, as detailed as possible, the feelings and thoughts that arise when imagining their visit to the movies. A sheet of paper was provided with instructions on top and 22 empty lines for their descriptions. As a filler activity, participants worked on a simple visual discrimination test for 10 minutes. Then, participants rated their self-attributed affiliation needs in the motive enactment test. Finally, participants were debriefed. The session lasted about 60 minutes.

4.4.4 Results

Descriptive information is provided in Table 4 (above the diagonal).

Table 4

Summary of Means, Standard Deviations, and Intercorrelations in Study 1 (above the diagonal) and Study 2 (below the diagonal)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	M	SD
(1) Action Orientation		.39**	.02	.14	.17	-.06	.04	.02	4.92	3.16
(2) Self-Esteem	.39**		.17	.03	.18	.20	.16	.34**	3.35	.49
(3) Implicit Affiliation Motive				-.09	-.40**	.08	.10	.06	1.90	1.12
(4) Implicit Achievement Motive					-.07	.05	.11	.08	2.50	1.28
(5) Implicit Power Motive						.07	-.02	.08	5.25	1.81
(6) Explicit Affiliation Motive							-.02	.24	2.27	.56
(7) Explicit Achievement Motive								.30*	1.10	.49
(8) Explicit Power Motive									1.35	.44
M	4.35	3.18								
SD	2.61	.56								

$* \ p < .05 \quad ** \ p < .01$

Implicit and explicit motives were standardized. For each of the three social motives, we calculated the absolute difference between the standardized implicit motive score and the standardized explicit motive scores. Subsequently, we averaged across the three domains. A hierarchical regression analysis was conducted on motive discrepancies. As predictor variables, action orientation and condition (-1 = cinema, 1 = mortality salience) were entered in step 1 and their interaction term in step 2. Following a recommendation by Aiken and West (1991), the continuous predictor variable (action orientation) was standardized before calculating the interaction term. Consistent with expectations, there was a significant Action Orientation x Condition interaction, $\beta = -.41$, $t(1, 59) = -3.65$, $p < .001$. Unstandardized regression weights using a range of ± 1 SD for action orientation were used to graph the interaction effect (see Figure 5).
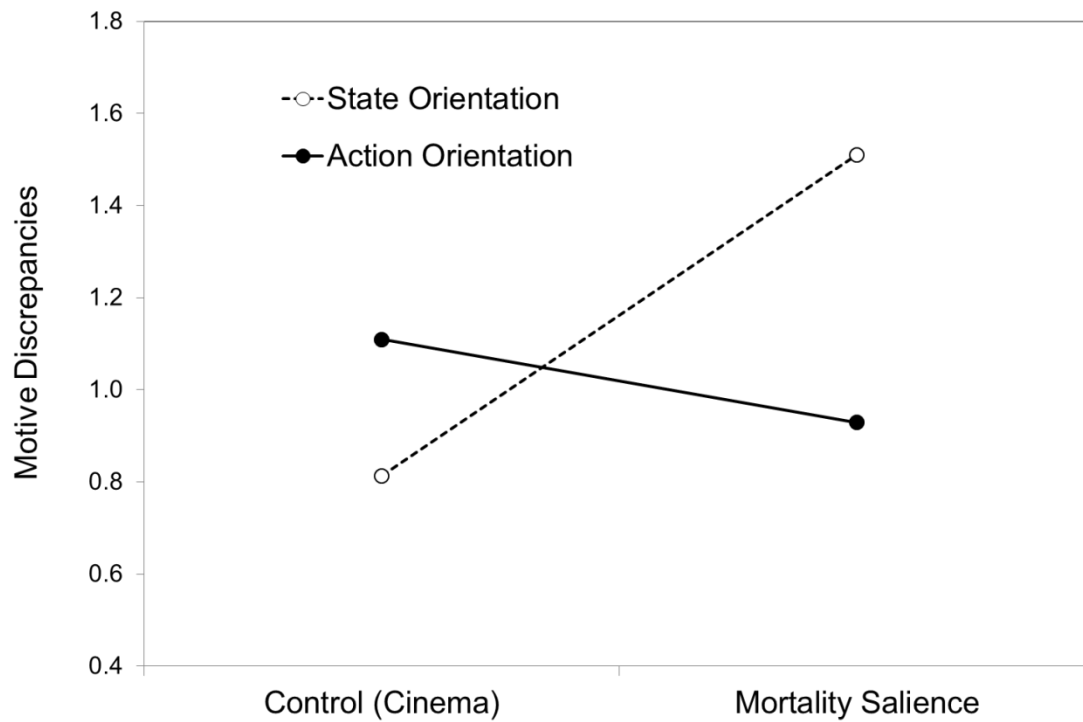
Figure 5: Discrepancies (absolute differences) between implicit and explicit motives aggregated across affiliation, achievement, and power as a function of threat-related state and action orientation and experimental condition in Study 1. Lower values indicate higher self-access.

For action-oriented participants (i.e., those scoring 1 *SD* above the mean), the slope was not significant and descriptively negative ($\beta = -.09$, $t = -1.01$, *ns*) indicating that they did not have increased motive discrepancies under mortality salience compared to control conditions. For state-oriented participants (i.e., those scoring 1 *SD* below the mean), the slope was significantly positive ($\beta = .35$, $t = -3.92$, $p < .001$), indicating higher motive discrepancies under mortality salience compared to control conditions. The difference between state- and action-oriented participants was significant under mortality salience ($\beta = -.29$, $t = -3.27$, $p < .01$) but not under cinema control conditions ($\beta = .15$, $t = 1.66$, *ns*).

The Action Orientation x Condition interaction remained stable when controlling for self-esteem, $\beta = -.43$, $t(1, 58) = -3.79$, $p < .001$. Replacing action orientation with self-esteem yielded no significant main or interaction effects. More specifically, the Self-esteem x Condition interaction was not significant, $\beta = -.17$, $t(1, 59) = -1.38$, ns.

When analyzing motive discrepancies separately for each of the three motives, the Action Orientation x Condition interaction was significant for affiliation ($\beta = -.34$, $t = -2.83$, $p < .01$) and achievement ($\beta = -.25$, $t = -2.03$, $p < .05$) and marginally significant for power ($\beta = -.22$, $t = -1.79$, $p < .08$).

4.4.5 Discussion

In Study 1, we used discrepancies between implicit and explicit motives as an inverse measure of self-access and predicted differential effects of mortality salience for state- and action-oriented participants. Results of Study 1 show that state-oriented participants had significantly higher motive discrepancies under mortality salience compared to cinema control conditions. Action-oriented participants, in contrast, showed descriptively the reversed pattern with decreased motive discrepancies under mortality salience compared to cinema control conditions. The finding is consistent with the assumption that state-oriented participants' lose access to the self and implicit representation of their own needs when reminded of death.

Despite the significant correlation between action orientation and self-esteem, the two constructs dissociated empirically. Reduced self-access under mortality salience was observed only for state orientation but not for low self-esteem. The finding for state orientation remained significant when controlling for self-esteem. Thus, state orientation is distinct from low self-esteem and associated with losing access to the self in the face of death as indicated by the mismatch of explicit strivings with implicit motives. The finding was significant for

affiliation and achievement but only marginally significant for power. This may be due to the explicit motive measure in which we included power enactment strategies in addition to power dominance items to achieve sufficient reliability.

In Study 1, we found the expected effect of lower self-access in state-oriented participants under mortality salience compared to control conditions. However, the expected effect of higher self-access in action-oriented participants was not significant. Motives may be such a central part of the self that action-oriented participants do not easily become careless when conveying these overarching personal strivings. In Study 2, we therefore decided to use a measure of self-access (i.e., self-infiltration) that taps into the source memory for less central preferences (e.g., the suitability of items for a new psychological test). Furthermore, we decided to switch to the more common control group of dental pain rather than having participants write about the pleasant event of watching a movie at the cinema.

4.5 Study 2

In Study 2, we used self-infiltration (i.e., the rate of false self-ascriptions) as an inverse measure of self-access. Consistent with previous research (Baumann & Kuhl, 2003; Kazén et al., 2003), two methodological precautions have to be fulfilled to make sure that false self-ascription (*FSA*) rates do indeed reflect self-infiltration. First, to avoid confounding with a general memory deficit concerning the source of items, we corrected FSA rates of externally recommended items for a baseline of general memory performance: FSA rates of remaining items. Second, to avoid confounding with a conflict-free identification with external recommendations, we considered only unattractive items. If the FSA effect occurs with *attractive* items, the assumption that self-infiltration took place remains uncertain because FSA rates could reflect identification with something that, although externally recommended, is attractive and may not represent much of an imposition. On the other hand, if the FSA

effect occurs with *unattractive* items, one can assume that self-infiltration took place (cf. Baumann & Kuhl, 2003; Kazén et al., 2003). Thus, we expected action-oriented participants to show higher FSA rates of unattractive recommendations (controlling for unattractive baseline items) under mortality salience compared to control conditions and/or state-oriented participants.

4.5.1 Participants

One hundred thirty-two psychology undergraduates (89 women) from the University of Trier, Germany, voluntarily participated in the experiment. We excluded eighteen participants from further analysis because of missing data. Participants received course credit in return for their participation. Their mean age was 22 years (range 18 to 29 years).

4.5.2 Materials

Action orientation ($\alpha = .78$) and self-esteem ($\alpha = .88$) were assessed with the same instruments as in Study 1.

4.5.2.1 Explicit Mood

A 23-item adjective checklist, including items from the PANAS (Watson et al. 1988; German version: Krohne et al. 1996), was used to assess participants' mood. For the present purpose, the positive and negative affect scales were relevant. Each scale consisted of three items that were rated on 4-point scales ranging from 0 (*not at all true of me*) to 3 (*very much true of me*). In the present sample, internal consistencies were $\alpha = .90$ for the positive affect scale and $\alpha = .73$ for the negative affect scale.

4.5.2.2 Self-Infiltration

An adaption of the computer program PANTER (Process-Analytic Neuroticism Test for Adults; Baumann & Kuhl, 2003; Kazén et al., 2003) in MediaLab was used to assess self-infiltration.

4.5.3 Procedure

Participants were tested in groups of up to six people. They were seated individually at a computer and started by filling in the action orientation and self-esteem scales. Next, participants received special instructions for the PANTER procedure: *Imagine that you would like to create a new psychological test on how good people are prepared for tasks in their daily life ("Daily Life Intelligence Test"). As usual in creating new tests, you are free to choose some items for this test on your own. However, some items are also recommended by experts.*

4.5.3.1 Attractiveness

Participants were asked to rate the attractiveness of 48 simple activities (e.g., read mirror writing, calculate square roots, finding train connections) as items for their test on a 10-point scale ranging from 1 (*very unattractive*) to 10 (*very attractive*). A median split was calculated to create the within-participants factor of low versus high item attractiveness. In later analyses, only items with low attractiveness ratings were relevant.

4.5.3.2 Self-Selection

Participants were asked to select items they felt suitable for the new "daily life intelligence test". Items were grouped into lists of six. Participants were asked to always select half of the items of each list for their new test - even if none of the items was very attractive.

4.5.3.2 Expert Recommendations

Half of the items were recommended as suitable for the new "daily life intelligence test" by experts. Participants were asked to pay attention to the recommendation of the experts. All items were presented sequentially on the screen in a new random order with recommendations being marked with an asterisk. Simultaneously, items were read from tape together with their recommendation status (*"recommended by experts"* vs. *"not recommended by experts"*).

The order of self-selection and expert recommendations was balanced between participants. The combination of self-selection and expert recommendations resulted in four categories as the actual source of items: *both* (self-selected by participants and recommended by experts), *self* (only self-selected by participants), *other* (only recommended by experts), and *remaining* (neither self-selected nor recommended).

4.5.3.3 Mortality Salience

In a next step, participants were randomly assigned to a mortality salience versus control condition by answering questions either about their death or about dental pain. As a filler activity, participants rated their explicit mood.

4.5.3.4 Classification Tasks

Participants were introduced to two unexpected memory tasks regarding the source of each activity. In a *self-classification task*, participants were asked to decide whether or not they had previously self-selected the items for the new test. In later analyses, only the self-classification task was relevant. In a separate *other-classification task*, they were asked whether or not experts had recommended the item for the new test. For each classification task, the 48 items were sequentially presented in a new random order. The order of the memory tasks was matched with the order of self-selection and expert recommendation. Finally, participants were thanked, debriefed, and given course credit in return for their participation. The experiment lasted about 60 minutes.

4.5.4 Results

Descriptive information is provided in Table 4 (page 63, below the diagonal).

4.5.4.1 Manipulation Check

To test whether mortality salience had any effects on conscious mood ratings, we conducted a hierarchical regression analysis on explicit negative and positive affect, respectively. Condition (-1 = dental pain, 1 = mortality salience) and threat-related action orientation were entered in step 1. The Action Orientation x Condition interaction was entered in step 2. In the analysis of negative affect, results indicated a significant main effect of action orientation, $\beta = -.31$, $t(1, 110) = -3.37$, $p < .01$. There were no significant main or interaction effects for condition. In the analysis of positive affect, results indicated a significant main effect of action orientation, $\beta = .23$, $t(1, 110) = 2.50$, $p < .02$. There were no significant main or interaction effects for condition.

4.5.4.2 False Self-Ascriptions

Rates of false self-ascription (FSA) were calculated as percentages of the total number of items per cell. For example, a 33.33 % FSA rate of unattractive recommendations indicated that two out of the six items in that category was misperceived as self-selected. In the present sample, FSA rates (assigned and baseline) of attractive items (27.79 %) were significantly higher than FSA rates of unattractive items (10.53 %), $t(113) = 8.38$, $p < .001$.

To test the effects of mortality salience on self-access, we conducted a hierarchical regression analysis on FSA rates of unattractive recommended items. FSA rates of unattractive remaining items were entered as a baseline of general memory performance in step 1. Condition (-1 = dental pain, 1 = mortality salience) and threat-related action orientation were entered in step 2. The Action Orientation x Condition interaction was entered in step 3. Consistent with expectations, results indicated a significant Action Orientation x Condition interaction, $\beta = -.23$, $t(1, 104) = -2.41$, $p = .018$. Unstandardized regression weights using a range of ± 1 SD for action orientation were used to graph the interaction effect (see Figure 6).
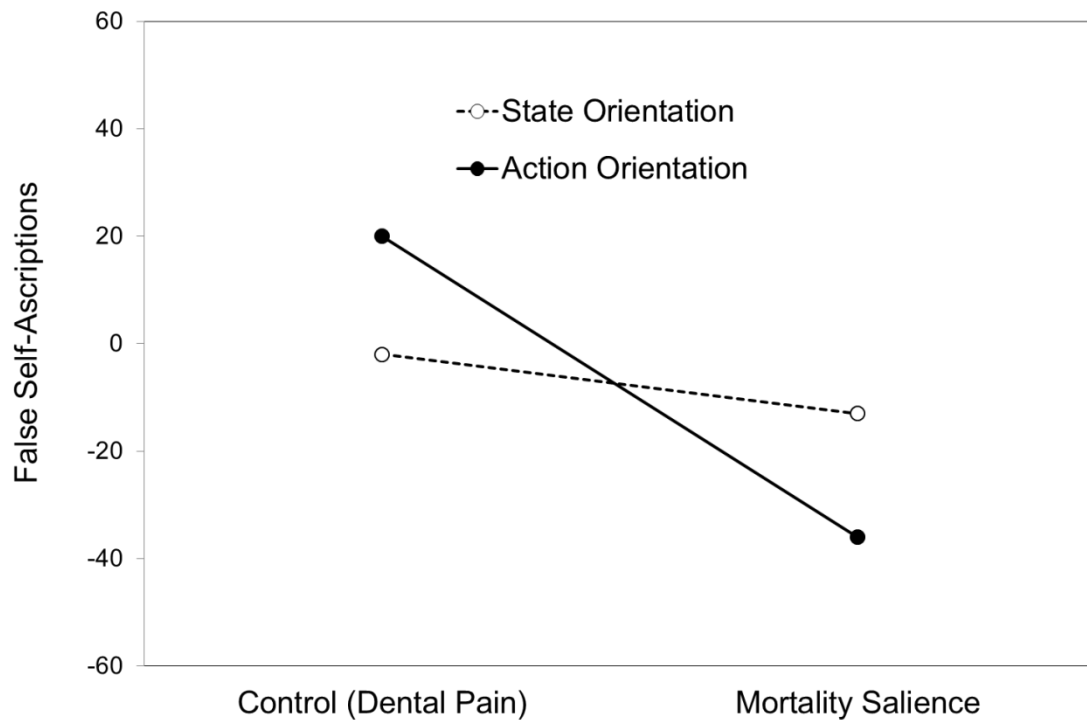
Figure 6: Self-infiltration (i.e., rates of false self-ascriptions of unattractive assigned tasks controlling for unattractive baseline tasks) as a function of threat-related state and action orientation and experimental condition in Study 2. Lower values indicate higher self-access.

For action-oriented participants (1 *SD* above the mean), the slope was significant ($\beta =$ -.28, $t = $ -2.15, $p < .035$) indicating that they had significantly lower FSA rates of unattractive recommended items (controlling for baseline items) under mortality salience compared to control conditions. For state-oriented participants (1 *SD* below the mean), the slope was not significant ($\beta = .05$, $t = $ -.61, $p = .55$) indicating no significant difference in FSA rates of unattractive recommended items (controlling for baseline items) under mortality salience compared to control conditions.

The Action Orientation x Condition interaction remained stable when controlling for self-esteem, $\beta = $ -.23, $t(1, 103) = $ -2.42, $p < .018$. Taking self-esteem as an additional factor revealed no significant effects for self-esteem. The three-way interaction of Action

Orientation, self-esteem, and condition was not significant $\beta = .15$, $t(1, 100) = 1.20$, $p = .23$. Furthermore, the two-way interaction of condition and self-esteem was not significant ($\beta = .02$, $t(1, 100) = .17$, $p = .87$), whereas the two-way interaction of condition and action orientation remained marginally significant ($\beta = -.22$, $t(1, 101) = -1.9$, $p = .06$).

In addition to unattractive items, we tested FSA rates of attractive items as a function of action orientation and condition. The Action Orientation x Condition interaction was not significant, $\beta = .15$, $t(1, 100) = 1.56$, $p = .12$.

4.5.4.3 False Other-Ascriptions.

To test whether the effects of mortality salience were not specific for self-access (FSA) but generalized to other source memory deficits, we conducted a hierarchical regression analysis on rates of False Other Ascriptions (FOA) of unattractive self-selected items. FOA rates of unattractive remaining items were entered as a baseline in step 1, condition and action orientation in step 2, and their interaction term in step 3. There were no significant main effects of action orientation and condition. Furthermore, the Action Orientation x Condition interaction was not significant, $\beta = -.14$, $t(1, 104) = -1.42$, ns. In the analysis of FOA rates of attractive items, there were also no significant main or interaction effects of action orientation and condition. FOA rates (self-selected and baseline) of attractive items (47.42 %) did not significantly differ from FOA rates of unattractive items (49.71 %), $t(113) = .92$, ns.

4.5.5 Discussion

In Study 2, we replicated the finding of increased self-access among action-oriented participants under mortality salience with a different (inverse) measure of self-access: self-

infiltration. More specifically, action-oriented participants had significantly lower tendency to misattribute unattractive recommendations as self-selected options under mortality salience compared to control conditions whereas state-oriented participants did not differ in their self-infiltration between conditions. Consistent with Study 1, the finding remained stable after controlling for explicit self-esteem, and there were no similar effects for self-esteem. Thus, being oneself in the face of death seems to be a coping strategy genuinely associated with action orientation and not with explicit self-esteem.

Three precautions were observed that increase our confidence in interpreting action-oriented participants' reduced FSA rates as indicators of low self-infiltration (i.e., high self-access). First, the finding was restricted to *un*attractive items. In line with organismic theories of personal growth (Deci & Ryan, 2000; Sheldon, Arndt, & Houser-Marko, 2003), falsely ascribing attractive items as self-selected may indicate a healthy bias toward identification with positive options. In the present study, FSA rates were significantly higher for attractive compared to unattractive items. This positive trend was not surprising among normal, well-adapted university students and not affected by personality and/or condition. *Un*attractive items, in contrast, lack the emotional support needed for integration into the self when no rationale or meaning other than the recommendation of an alleged expert is provided. Thus, falsely ascribing unattractive items indicates an unhealthy tendency toward self-infiltration. Only this negative tendency was significantly reduced among action-oriented participants under mortality salience.

Second, the measure was controlled for a baseline of general memory performance (i.e., FSA rates of remaining items). Thus, under mortality salience, action-oriented participants did not simply access global processes such as working memory capacity (Luu, Tucker, & Derryberry, 1998) but rather specific, self-related information: emotional preferences and memory traces of whether they had selected a specific option among many possible alternatives (Gollwitzer, 1996; Heckhausen & Kuhl 1985; Kazén et al., 2003). Third,

action-oriented participants did not have a better source memory or reality monitoring (e.g., Johnson & Raye, 1981) under mortality salience because the lower rates of false self-ascriptions (introjection) did not go along with lower rates of false other-ascriptions (projection).

In Study 2, we found a significant decrease in self-infiltration among action-oriented participants under mortality salience but not the expected increase among state-oriented participants. In previous studies on self-infiltration (e.g., Baumann & Kuhl, 2003; Kazén et al., 2003), self-infiltration was observed among state-oriented participants under consciously experienced threats but not under more subtle, implicit stress conditions (Baumann, 1998). In the present study, in contrast, we measured self-access after a delay that enabled participants to push thoughts about mortality out of their conscious mind. Although this approach is typical for TMT studies and yields larger mortality salience effects than no delay (Burke et al., 2010), it may not be sufficient to elicit self-infiltration among state-oriented participants. In Study 3, we therefore aimed to find a measure that is more sensitive to the implicit nature of mortality salience effects in order to detect the full crossover interaction between action orientation and condition.

4.6 Study 3

In Study 3, we used the stability in repeated preference judgments as a measure of self-access. Judgment coherence and stability over time have been widely studied in economic theory (Regenwetter, Dana, & Davis-Stober, 2011) and findings indicate that both decrease through conscious reasoning (Nordgren & Dijksterhuis, 2009). Moreover, previous studies yielded the expected crossover interactions for social stressors (Baumann, 1998; Guevara, 1994; Koole et al., in press; Kuhl & Beckmann, 1994a). Therefore, we expected action-oriented participants to show lower instability (i.e., higher self-access) after mortality

salience compared to control conditions and/or their state-oriented counterparts. Consistent with previous research (Guevara, 1994; Kuhl & Beckmann, 1994a), we assessed the initial preference ratings under neutral conditions in order to have an approximation of "true" preferences and compared them with the ratings after the experimental manipulation.

4.6.1 Participants

Eighty-six psychology undergraduates (68 women) from the University of Trier voluntarily participated in the experiment. They received course credit in return for their participation. Their mean age was 23 years (range 18 to 30 years).

4.6.2 Materials

Action orientation ($\alpha = .78$) and self-esteem ($\alpha = .85$) were assessed with the same instruments as in Studies 1 and 2.

4.6.3 Procedure

Data were collected during two sessions that were one week apart. In the first session, participants started with a (go/no go) task that was not relevant for the present study. Next, participants filled out the action orientation and self-esteem scales. Subsequently, they were asked to rate the attractiveness of 32 trait adjectives (16 positive and 16 negative) on a scale from -100 (*very unattractive*) to +100 (*very attractive*) using a mouse. In the second session, participants were randomly assigned to one of two experimental conditions. The *mortality salience* and *dental pain* conditions were the same as in Study 2. Next, participants worked on

the same unrelated task as in session one. Then, they rated the attractiveness of the same 32 trait adjectives as in session one. Items were presented individually in a new random order. Finally, participants were debriefed and dismissed. Each session lasted about 45 minutes.

4.6.4 Results

4.6.4.1 Descriptives and Correlations

The action orientation scale had a mean of $M = 6.24$ ($SD = 2.76$, range 0 to 11) and the self-esteem scale had a mean of $M = 3.29$ ($SD = .53$, range 1.44 to 4.00). The correlation between action orientation and self-esteem was marginally significant, $r = .20$, $p < .07$, indicating that higher action orientation was associated with higher self-esteem.

4.6.4.2 Instability in Trait Ratings

A hierarchical regression analysis was conducted on absolute differences between t1 and t2 attractiveness ratings of trait adjectives with action orientation, self-esteem, and experimental condition (dental pain vs. mortality salience) entered in step 1, the two-way interactions in step 2, and the three-way interaction in step 3. Predictor variables were standardized before calculating interaction terms. The Action Orientation x Condition interaction was the only significant effect, $\beta = .27$, $t(3, 79) = 2.45$, $p < .02$. Unstandardized regression weights using a range of ± 1 SD for action orientation were used to graph the interaction effect (see Figure 7).
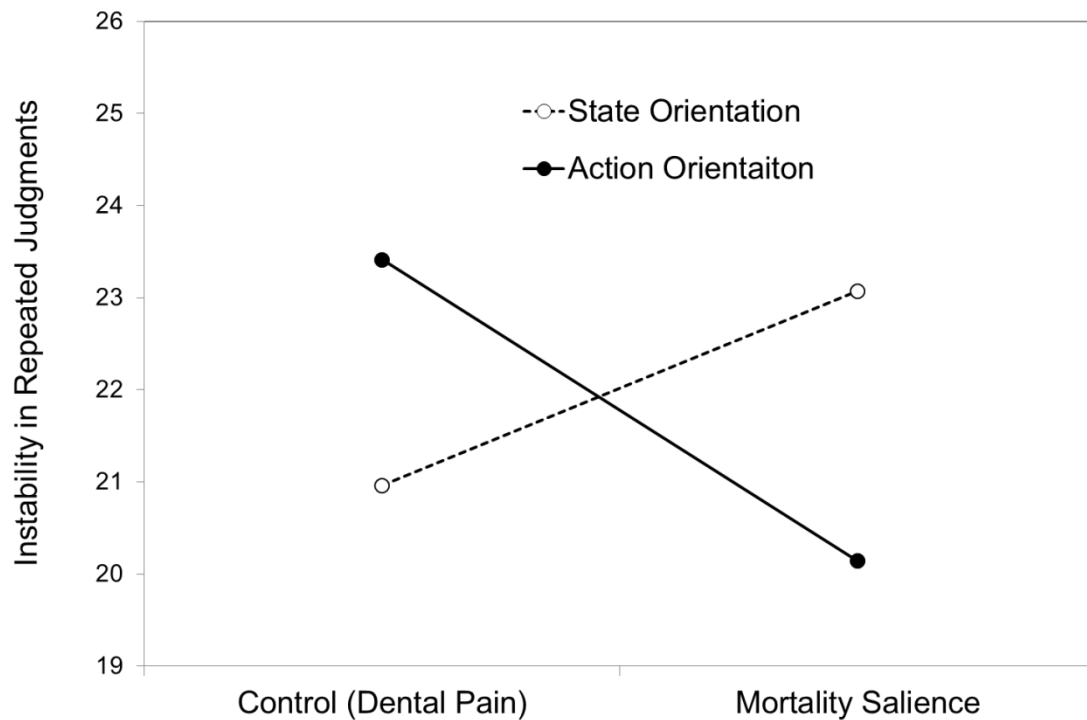
Figure 7: Instability (absolute differences between T1 and T2) in repeated attractiveness ratings (from -100 to +100) of trait adjectives as a function of threat-related state versus action orientation and experimental condition in Study 3. Lower values indicate higher self-access.

Consistent with expectations, action-oriented participants (1 *SD* above the mean) showed significantly lower instability (i.e., higher self-access) of repeated adjective ratings in the mortality salience compared to the dental pain control condition, $t(82) = 2.10$, $p < .04$. In contrast, state-oriented participants (1 *SD* below the mean) showed a marginally significant trend towards higher instability in the mortality salience compared to the dental pain control condition, $t(82) = -1.73$, $p < .09$. Findings are consistent with the assumption that action-oriented participants have increased self-access (i.e., lower instability of repeated preference ratings) after mortality salience.

A similar hierarchical regression analysis with self-esteem (instead of action orientation) yielded no significant effects for self-esteem. More specifically, the Self-esteem x Condition interaction was not significant, $\beta = .11$, $t(3, 79) = .96$, ns. On a descriptive level, participants with high self-esteem had even lower self-access (i.e., more instability) under mortality salience compared to control conditions (22.47 vs. 21.37) whereas participants with low self-esteem were unaffected by conditions (21.83 vs. 21.62).

4.6.5 Discussion

In Study 3, we measured instability of repeated judgments as an inverse indicator for self-access. Consistent with our expectations, we found action-oriented participants to show significantly lower instability of repeated judgments under mortality salience compared to control conditions. However, the expected effect of state-oriented participants showing higher instability of repeated judgments under mortality salience was only marginally significant. Therefore, we decided for a replication of this study with a slightly greater sample size.

4.7 Study 4

Study 4 aimed at directly replicating the finding of increased stability of repeated preference judgments in action-oriented participants after mortality salience. In addition to the trait adjectives from Study 3, we used item material that is less familiar and more arbitrary to participants (i.e., Chinese symbols) in order to further test the generalizability of our findings.

4.7.1 Participants

Hundred and thirteen psychology undergraduates (91 women) from the University of Trier voluntarily participated in the experiment. They received course credit in return for their participation. Their mean age was 21 years (range 18 to 30 years).

4.7.2 Materials

Action orientation ($\alpha = .80$, $M = 4.68$, $SD = 2.93$, range 0-12,) was assessed with the same instrument as in Studies 1-3. Participants' mood (positive affect $\alpha = .87$; negative affect $\alpha = .69$) was assessed with the same instrument as in Study 2.

4.7.3 Procedure

Participants filled out the action orientation scale and rated their momentary mood. Next, they were asked to rate the attractiveness of 24 Chinese symbols and the attractiveness of 32 trait adjectives (16 positive and 16 negative) on a scale from -9 (*very unattractive*) to +9 (*very attractive*). Items were presented individually on the computer screen. The order of the two rating tasks (Chinese symbols and trait adjectives) was balanced between participants. After completion of the rating tasks, participants were randomly assigned to one of two experimental conditions. The *mortality salience* and *dental pain* conditions were the same as in Studies 2 and 3. As a filler task, participants rated their momentary mood again. Subsequently, participants were asked to repeat the two rating tasks (Chinese symbols and trait adjectives). Items were presented individually in a new random order. Participants

received the two rating tasks at time 2 (t2) in the same order as at time 1 (t1). Finally, participants were debriefed and dismissed. The session lasted about 45 minutes.

4.7.4 Results

4.7.4.1 Manipulation Check

To test whether mortality salience had any effects on conscious mood ratings, we conducted a hierarchical regression analysis on explicit negative and positive affect at time 2, respectively. Baseline mood ratings (time 1) were entered in step 1, action orientation and condition in step 2, and their interaction term in step 3. In both mood scales, results indicated no significant main or interaction effects of action orientation and condition.

4.7.4.2 Instability in Trait Ratings

A hierarchical regression analysis was conducted on absolute differences between t1 and t2 attractiveness ratings of trait adjectives with action orientation and condition entered in step 1, and their interaction term in step 2. The analysis yielded a significant Action Orientation x Condition interaction, $\beta = -.29$, $t(109) = -3.15$, $p < .01$. Findings are listed in Table 1. Consistent with expectations, action-oriented participants showed significantly lower instability of repeated adjective ratings in the mortality salience compared to the dental pain control condition, $t(109) = -2.20$, $p < .05$. In contrast, state-oriented participants showed significantly higher instability of repeated adjective ratings in the mortality salience compared to the dental pain control condition, $t(109) = 2.27$, $p < .05$. These findings are graphically displayed in Figure 8.
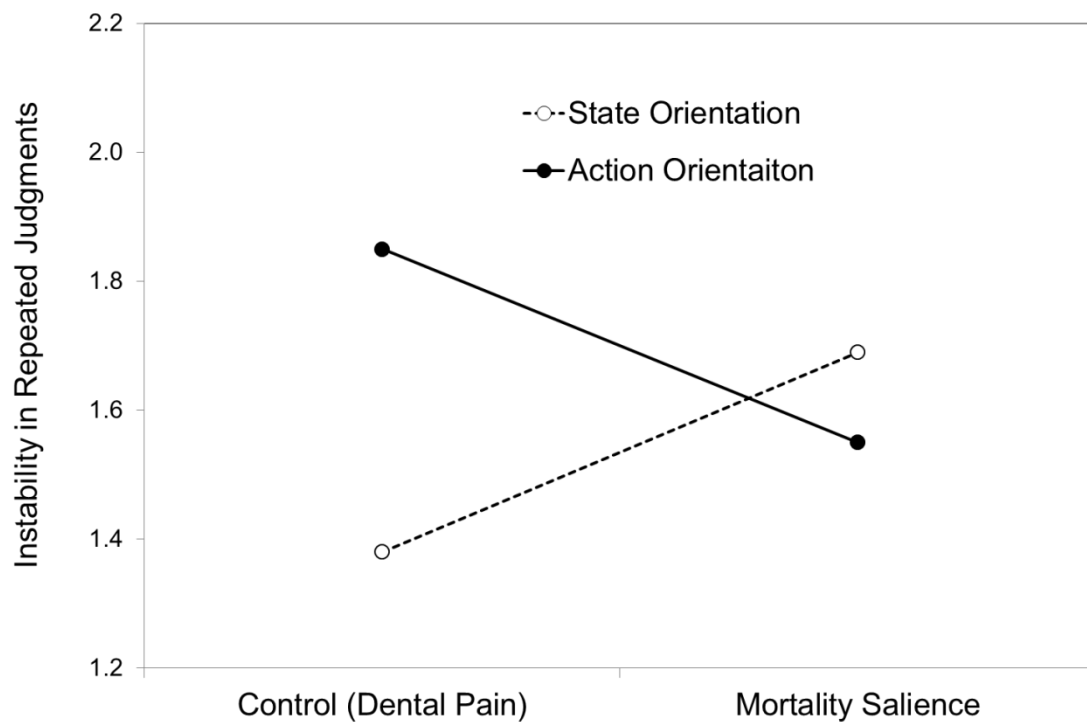
Figure 8: Instability (absolute differences between T1 and T2) in repeated attractiveness ratings (from -9 to +9) of trait adjectives as a function of state versus action orientation and experimental condition in Study 4. Lower values indicate higher self-access.

Findings are consistent with the assumption that action-oriented participants have increased self-access after mortality salience.

4.7.4.3 Instability in Chinese Symbol Ratings

A similar hierarchical regression analysis was conducted on absolute differences between t1 and t2 attractiveness ratings of Chinese symbols (see Table 5).

Table 5

Instability (Absolute Differences between T2 and T1) and Systematic Changes in

Attractiveness (T2, Controlling for T1) in Ratings of Chinese Symbols in Study 4 (N = 113)

	State Orientation		Action Orientation	
	Dental Pain	Mortality	Dental Pain	Mortality
Instability [1] (|T2-T1|)	3.37	3.54 [a]	3.86 [b]	2.79 [ab]
Attractiveness T2 (contr. T1)	.13	-.23	-.05	.14

[1] Lower values indicate higher self-access.

[a] [b] Means in the same row sharing a superscript are significantly different in simple slope analyses.

There was a significant Action Orientation x Condition interaction, $\beta = -.22$, $t(109) = -2.36$, $p < .05$. Unstandardized regression weights using a range of ± 1 *SD* for action orientation were used to graph the interaction effect. Consistent with expectations, action-oriented participants (i.e., those scoring 1 *SD* above the mean) showed significantly lower instability of repeated attractiveness ratings of Chinese symbols in the mortality salience compared to the dental pain control condition, $t(109) = -2.88$, $p < .01$. In contrast, state-oriented participants (i.e., those scoring 1 *SD* below the mean) did not differ in their stability of repeated attractiveness ratings of Chinese symbols in the mortality salience compared to the dental pain control condition, $t(109) = .46$, *ns*.

4.7.4.4 Cultural Worldview Defense

To rule out the possibility that Chinese symbols were systematically devaluated after mortality salience, a regression analysis was conducted on attractiveness ratings at time 2. Attractiveness ratings at time 1 were entered in step 1, Action Orientation and Condition in step 2, and their interaction term in step 3. There were no significant effects. More

specifically, the Action Orientation x Condition interactions was not significant, $\beta = .06$, $t(108) = .94$, *ns*. Findings are consistent with the assumption that there were no systematic changes in attitude towards Chinese symbols due to experimental conditions.

4.7.5 Discussion

In Study 3, we found the expected crossover interaction between action orientation and condition in the instability of repeated preference ratings. Furthermore, the interaction was significant in ratings of trait adjectives as well as Chinese symbols. However, instability in repeated preference ratings does not inform about the direction of ratings. This leaves room for alternative interpretations because reduced stability may not be due to reduced self-access but systematic defense mechanisms. For example, systematic devaluation of Chinese symbols after mortality salience may indicate a worldview defense mechanism in our non-Chinese sample. The present findings cannot easily be accounted for by such a worldview defense mechanism because the tendency towards devaluation of Chinese symbols was not significantly moderated by personality and/or mortality salience.

4.8 General Discussion

The present research explored the way self-regulatory abilities shape the nature of people's coping processes in response to existential threat. Consistent with PSI theory and findings for other self-related threats (Baumann & Kuhl, 2003; Baumann et al., 2005; Koole & Jostmann, 2004; Kuhl, 2000; Kuhl & Beckmann, 1994b), we expected action-oriented participants to show greater self-access under mortality salience compared to state-oriented participants and/or control conditions. Across four studies, we found significant interactions

between action orientation and experimental conditions. Under mortality salience, action-oriented participants showed significantly higher self-access as indicated by lower discrepancies between implicit and explicit motives (Study 1), lower rates of false self-ascriptions of unattractive recommendations (Study 2), and lower instability in repeated preference judgments of traits (Studies 3-4) as well as Chinese symbols (Study 4) compared to state-oriented participants and/or control conditions. Findings are consistent with the assumption that action orientation fosters being oneself in the face of death.

It is noteworthy that mortality salience differentially affected action- and state-oriented participants across three different measures of self-access (Study 1: motive discrepancies; Study 2: self-infiltration; Studies 3-4: instability of repeated preference judgments), two different control conditions (Study 1: cinema; Studies 2-4: dental pain), and two different types and lengths of delay between the induction of mortality salience and the assessment of the dependent variable (Study 1: visual discrimination task for 10 minutes; Studies 2-4: mood rating for 3 minutes). This methodological convergence increases our confidence in the robustness of the finding of differential coping processes among action- and state-oriented individuals in response to existential threat.

To our knowledge, our paper is the first to extent the heightened access to the self that facilitates emotion regulation for action-oriented people to mortality salience. Our findings show that action- and state-oriented people respond to mortality salience in the same way they respond to other threats to the self. In the present studies, we did not directly compare mortality salience with other self-threats. However, our findings perfectly match the differential effects obtained with the same measures of self-access in response to major changes in life circumstances, negative mood inductions, and social pressure (e.g., Baumann et al., 2005; Kazén et al., 2003; Kuhl & Beckmann, 1994a). Although TMT describes death as the ultimate threat to the self (Greenberg et al., 1986; Pyszczynski et al., 1999), our findings

are more in line with research indicating that mortality salience may not be a unique threat to the self (McGregor et al., 2009; van den Bos, 2009).

4.9 Limitations and Future Perspectives

The present research can be considered preliminary and thus leaves a host of questions open for further scrutiny. First, we used only one method of inducing mortality salience. Previous TMT research has established conceptually identical findings across a wide range of induction methods (e.g., Burke et al., 2010). Therefore, we are confident that our findings will also generalize across methods. Nevertheless, future studies could test whether our findings replicate when inducing mortality salience more incidentally by priming wilderness (Koole & Van den Berg, 2005) or applying questionnaires in a close physical proximity to a cemetery (Gailliot et al., 2008).

Second, we documented the unique contribution of action orientation over and above of explicit self-esteem. Future research could extend divergent validity, for example, with respect to self-control strategies that draw on conscious, limited, and depleting volitional resources (e.g., trait self-control, Tagney, Baumeister, & Boone, 2004; for mortality salience effects see Gailliot et al., 2006), affect regulation strategies that are less reliant on the self (e.g., reappraisal and suppression, Gross & John, 2003; for an overview see Koole, 2009), and measures of implicit self-esteem (e.g., Bosson, Swann, Jr., & Pennebaker, 2010). Although many published studies have shown that the effects of action versus state orientation are empirically separable from these and other individual-difference variables, it would be informative to demonstrate their incremental contribution to the nature of coping with existential threat.

Third, we did not find a full crossover interaction between action orientation and experimental conditions across all measures of self-access. Whereas we found a full crossover

interaction in the instability of trait ratings, other measures of self-access yielded only a threat-contingent decrease among state-oriented participants (motive discrepancies) or only a threat-contingent increase among action-oriented participants (self-infiltration and instability in ratings of Chinese symbols). Future studies should test whether these differences between measures are random or replicate because systematic differences convey information about underlying mechanisms.

4.9.1 The Three Measures of Self-Access

Our three measures of self-access differ along several dimensions. First, the measures differ in the centrality of the self-aspects with motive discrepancies tapping into far more central aspects of the self than the other measures. The nonsignificant effect of condition and low level of motive discrepancies for action-oriented participants could imply that they do not lose interest in activating their full self-regulatory potential when central self-aspects are at stake. Preferences for traits and Chinese symbols, in contrast, are so peripheral that action-oriented participants may want to save volitional resources as long as conditions do not imply any threat to the self.

Second, the measures differ in their sensitivity to implicit threat. Similar to the mortality salience induction in the present studies, Baumann (1998) found that weak negative mood inductions do not elicit self-infiltration but instability in repeated preference judgments among state-oriented participants. This dissociation may be due to the computational requirements of the tasks. Information related to emotional preferences is not "prestored" (i.e., having direct retrieval access) but has to be actively searched for and computed "online" (Kazén et al., 2003). The self-infiltration measure additionally involves the retrieval of a previously stored information (i.e., having selected an item for a new test). The implicit anxiety associated with reminders of one's mortality may not be strong enough to inhibit this

memory trace among state-oriented participants albeit sufficient to motivate action-oriented participants to check thoroughly before classifying an option as self-selected. Future studies could test whether a full crossover interaction occurs when mortality is not only primed before the retrieval phase (i.e., the self-classification task) but also before the encoding phase (i.e., the self-selection of items).

Third, the measures differ in their item difficulty. The attractiveness of Chinese symbols is far more difficult to rate than the attractiveness of personality traits and social motives. This may explain why state-oriented participants have a higher instability in repeated ratings of Chinese symbols across conditions. Although thoughts about dental pain have been found to elicit different patterns of neural activity in fMRI than thoughts about death (Quirin et al., 2011), they may be sufficiently negative to inhibit access to such subtle emotional preferences. Future research could test whether a relaxation condition increases stability in repeated ratings of Chinese symbols among state-oriented participants.

4.9.2 The Nature of State-Oriented Coping

The self is conceived of as a higher, top-down processing system (Baumann & Kuhl, 2002, 2003; Koole & Jostmann, 2004; Kuhl, 2000, 2001). Our findings support the assumption that action-oriented participants access this system and rely on coping strategies connected to personal meaning. TMT findings that mortality salience can increase the adoption of intrinsic goals (Lykins et al., 2007) and generosity (Cozzolino, Sheldon, Schachtman, & Meyers, 2009) may further indicate such self-reliant coping. But how do state-oriented participants cope if they lose access to the self? They may use coping strategies that involve lower, bottom-up processes like highly overlearned, automatized behavioral routines that are rather impersonal. In TMT research, many responses to mortality salience appear to be highly automatic, for example, increased stereotyping (Schimel et al., 1999),

anxious/compulsive behavior (Strachan et al., 2007), and more favorable attitudes towards smoking among smokers (Hansen et al., 2010). These effects may be driven by state orientation. Future studies could include measures of automatic processes to test the hypothesis that state-oriented participants have increased access to habits in the face of death.

In the present studies, we tested the *nature* of action- and state-oriented coping processes and not their *efficiency* and *consequences* for worldview defenses, self-esteem strivings, and well-being. However, there is some indirect evidence on these issues because our indicators of self-access are strongly associated with well-being (Baumann et al., 2005; Brunstein et al., 1998; Kuhl & Kazén, 1994b; Schüler et al., 2009). Therefore, losing self-access in the face of death may be maladaptive for well-being. Effects of mortality salience are rather short-lived and our student samples typically not often confronted with existential threat. Nevertheless, one could hypothesize that losing self-access may become maladaptive if people are frequently exposed to death at work or in their private life. Therefore, it would be informative to replicate our findings with hospice workers, patients, or older people and to observe the efficiency and consequences of state- and action-oriented coping styles longitudinally.

Chapter 5

Discussion

5.1 Overview

At the end, death is certain, although we may wish for never-ending life. In Chapter 2, 3 and 4 different studies researched the effects of reminders of death on people concerning affective responses and self-regulation of affective responses. Based on terror management theory (Pyszczynski et al., 1999; Rosenblatt et al. 1989), it is assumed that the knowledge of the finiteness of life is the highly threatening the self and provokes existential fears although these fears are suppressed in consciousness. Although the assumption of death arousing existential fears is central in terror management theory, a demonstration of an affective response is still missing. This thesis aimed at demonstrating the missing affective response under mortality salience. It was assumed that (a) a confrontation with death-reminders arouses negative affect and (b) that this affect is suppressed in conscious experience but highly accessible out of focal attention. Hence, (c) methods to assess implicit negative affect should reveal the suppressed affective response. For this purpose, two studies were conducted measuring implicit negative affect under mortality salience and are described in detail in Chapter 2.

In addition to general affective reactions under mortality salience, people differ in their sensitivity to affective states and their ability to regulate affective states. As outlined in Chapter 1, traits can be divided in those which change the threshold for entering an affective state and those which help or impede to leave. This differentiation was adopted for the field of interindividual differences in terror management. From my point of view, traits which buffer anxiety aroused by death-reminders like the implicit self-esteem can be perceived as such traits of affect sensitivity. Those effects of affect sensitivity are well researched, whereas less studies aim at affect-regulation. Due to the missing evidence of an affective reaction under mortality salience, a direct demonstration of effects of self-regulation on affect under mortality salience is missing too. In line with PSI theory, action orientation is conceived as

the ability to down-regulate negative affect. Therefore, it was assumed that (d) high action orientation results in lower negative affect under mortality salience, whereas (e) state orientation should result in higher negative affect under mortality salience. Chapter 3 described a single study exploring the effects of self-regulatory abilities on implicit negative affect under mortality salience.

According to PSI theory, action orientation is described as a flexible and intuitive regulation of emotions. That means, compared to other strategies to repress emotions like self-control (Baumeister & Heatherton, 1996) affect is regulated by integrating it into larger networks of personal meaning. However, mechanisms *how* action- versus state-oriented persons regulate existential fears remain unclear, so that Chapter 4 explored these mechanisms under mortality salience. In line with theoretical assumptions of PSI theory, it was assumed that mortality salience (f) results in higher self-access in action-oriented individuals and (g) in lower self-access in state-oriented individuals.

The following paragraphs will summarize central findings described in Chapter 2, 3 and 4 and discuss their relevance for the current state of research. Additional, limitations and an outlook for further research is given.

5.2 Contributions to the Body of Psychological Knowledge

5.2.1 Death Arouses (Implicit) Existential Fears

In Chapter 2, death-related fears out of focal attention were demonstrated by methods to measure implicit negative affect. Using two different methods to measure implicit negative affect, the OMT and the IPANAT, implicit negative affect was found to increase under mortality salience compared to control conditions. Participants under mortality salience wrote significantly more stories referring to implicit negative affect and judged artificial words to

express significantly more implicit negative affect compared to participants of the control condition.

Thus, terror management research is complemented by a first demonstration that death indeed arouses fear. These results are important in so far, as they directly evidence existential fears under mortality salience whereas previous studies demonstrated either higher accessibility of death-related *thoughts* (Arndt et al., 1997; Cox, Goldenberg, Pyszczynski, & Weise, 2007; Greenberg et al., 2001) under mortality salience or indirect evidence for an affective response like physiological responses (Quirin et al., 2012, see Chapter 1). Results presented in Chapter 2 support different assumptions of terror management theory, by showing an affective response to reminders of death only on an implicit level, whereas an explicit representation of affect is avoided. In line with previous studies on terror management (Solomon et al., 2004), mortality salience provoked no explicit affective reaction, questionnaires revealed no explicit anxiety or sadness. This could be interpreted as a successful suppression of anxiety in focal attention, implicit anxiety, however, is highly accessible at the same time.

In addition, results revealed a special affective reaction of implicit anxiety compared to implicit sadness, which is line with terror managements' assumption that a confrontation with death arouses existential *fears*. Whereas Study 1 only assessed implicit anxiety with the OMT, in Study 2 implicit sadness was assessed as well. Under mortality salience, implicit anxiety was shown to increase; however, death-reminders had no effect on implicit sadness or happiness. This is in line with PSI theory, which differentiates between of an increased negative affect and decreased positive affect. Moreover this meets the differentiation by Higgins et al. (1986) between dejection-related emotions indicative of a lack of positive affect (e.g., sadness) and agitation-related emotions indicative of the presence of negative affect (e.g., anxiety). These results confirm the assumption that a confrontation with death arouses existential fears characterized by negative affect (not a decrease of positive affect). One might

speculate that this reaction could be beneficial in an evolutionary perspective. As negative affect is assumed to activate the object recognition system (PSI; Chapter 1) the recognition of dangerous or odd stimuli is enhanced. Death reminders like graves or corpses would therefore facilitate the ability to screen the environment for dangerous stimuli.

Surprisingly, the main effect of condition on implicit negative affect in Chapter 3 was missing. This may have different reasons, as different kinds of mortality salience inductions were used and a different sample was assessed. Especially, the sample in Chapter 3 was very young, 15 to 18 years old. Although it was expected that this sample does not differ to other samples used in terror management research as they share different aspects like the unfamiliarity with death and dying, these participants were in a special moment of development, the puberty. It could be possible that interindividual differences are overemphasized and may overrun the general effect of mortality salience. However, this needs further research with a replication of these effects with a larger sample and a systematized variation of the mentioned variables like age or mortality salience induction.

Considering central assumptions of PSI theory - the modulation of interactions of systems by affect - the demonstration of negative affect is important as well. Whereas a decrease of positive affect inhibits the connection between intuitive behavior control and intention memory (see Chapter 1), an increase of negative affect inhibits the connection between object recognition system and extension memory. Therefore, abilities for regulating negative affect are important in research on affective responses after a confrontation with death. Effects of self-regulation on implicit negative affect under mortality salience are elaborated in the following paragraph.

5.2.2 Effects of Self-Regulation on Implicit Negative Affect under Mortality Salience

Based on results presented in Chapter 2, the next Chapter provided a study researching effects of self-regulation under mortality salience. In contrast to other studies which focused on effects of self-regulation on coping strategies like cultural worldview defense (Kazén et al., 2005; Koole & Van den Berg, 2005), the presented studies aimed at showing that affect-regulatory skills influence the affective response on death-reminders. Chapter 3 was directly connected to the results reported in Chapter 2: Implicit negative affect under mortality salience was explored depending on peoples' self-regulatory skills. Indeed, action-oriented persons showed less implicit negative affect under mortality salience compared to a control condition, whereas state-oriented participants showed an increase of implicit negative affect under mortality salience compared to a control condition. Action-oriented persons even tended to show higher rates of implicit negative affect under relaxed conditions, which replicates earlier findings on action orientation (Koole et al., 2012).

Whereas Chapter 2 demonstrated an affective response on reminders of death, Chapter 3 demonstrated that this affective response is depending on the ability to self- regulate negative affect, therefore depending on action-orientation. By that, it can be established that differences in state- versus action-oriented persons coping with mortality salience (Kazén et al., 2005; Koole & Van den Berg, 2005) can be ascribed to the underlying process of self-regulating negative affect aroused by a reminder of death.

5.2.3 Affective versus Cognitive Responses under Mortality Salience

Although this thesis focused on affect under mortality salience, Chapter 3 revealed an additional cognitive reaction towards death-reminders. Descriptively, a higher accessibility of death-related thoughts for action- oriented persons under mortality salience compared to control conditions and compared to state-oriented persons was found. This is important, as Galliot et al. (2006) found a decrease of death-related thoughts for people high in self-control, whereas in this study, participants with high skills in self-regulation showed higher death-thought accessibility. This could support the differentiation between self-regulation and self-control: Whereas self-control involves the suppression of death-related thoughts and fears which depletes volitional resources, self-regulation of affect concerns the regulation of the affective response towards death, whereas the cognitive representation remains accessible.

Besides the chance to differentiate between self-regulation and self-control, the dissociation of affective and cognitive responses in action-oriented persons arouses more questions. For example, one might think of their connection to cultural worldview defense. What would be necessary to provoke cultural worldview defense under mortality salience?

Does high implicit negative affect predict more cultural worldview defense? Or is cultural worldview defense more connected to the higher accessibility of death-related thoughts, like demonstrated earlier (Hayes et al., 2008) and by that dissociated from the affective response? These questions of course require further research and as these results occurred incidentally, replications are needed as well.

5.2.4 Being Oneself in the Face of Death: Self-Access under Mortality Salience as an Opportunity for Personal Growth

Although different findings suggest the relevance of self-regulation under mortality salience, mechanisms *how* action-oriented persons regulate existential fears were unclear. Chapter 4 tried to capture mechanisms of self-regulation in the face of death. In line with assumptions of PSI theory, it was expected that persons high in affect-regulatory skills gain access to the self to regulate negative affect. In a broad survey, with different experimental designs modified in each study and three different measures of self-access (motive congruence; self-infiltration; stability of repeated preference judgments) this assumption was tested.

Results displayed a complex picture of effects of action orientation on self-access under mortality salience. Whereas state-oriented persons showed a loss of self-access especially measured by motive incongruence and instability of repeated judgments, action-oriented persons showed higher self-access measured by low self-infiltration and higher stability of repeated judgments. Although these results weren't consistent through all studies, self-access was found to increase under mortality salience in action-oriented and decrease under mortality salience in state-oriented persons.

Whereas in previous studies self-control was found to be helpful to suppress anxiety connected with death, self-regulation involves activating the self and trying to integrate existential fears into the broad network of personal experiences, needs and values. Previous studies already demonstrated an increase in the adoption of intrinsic goals (Lykins et al., 2007) and generosity (Cozzolino et al., 2009) under mortality salience which could be examples of effects of higher self-access under mortality salience. They already outlined different situational cues to be responsible for these results.

Lykins et al. (2007) found different kinds of induction of mortality salience to be connected with higher intrinsic goal adoption (Lykins et al., 2007) and less greedy behavior (Cozzolino et al., 2004, 2009). They encouraged participants to reflect death, for example by asking participants what impact their death may have on relatives and friends. By that, they were instructed to use a larger network of own experiences to process mortality salience. Processing in large networks of meanings is a function connected to the extension memory, as reviewed in Chapter 1.

Additionally, mindfulness (Niemiec et al., 2010) was found to reduce cultural worldview defense. Mindfulness was conceptualized as the attention to present experiences and by that the ability to perceive actual emotional states even anxiety aroused by reminders of death. This may reflect a more self-confrontational coping which is the way action-oriented persons cope with mortality salience. For example, Bishop and colleagues (2004) have explained mindfulness as a two-component phenomenon which is described by first a regulation of attention towards mental events in the present moment and second by a state of openness and acceptance. Regarding processes in terror management, this could mean that present thoughts and feelings are not suppressed but noticed and accepted.

Mental states, thoughts and feelings are identified as flowing, they come and go. In a mindful state people try to observe these state without judging them as desirable or bad as something which has to be pushed out of mind. By that people distance themselves from these states, which could be the reason why even state-oriented persons could benefit from such interventions. Negative affective states, in this case aroused death-anxiety is observed and accepted as a feeling which is aroused in a confrontation with death but it is not lasting. In this way overwhelming feelings of anxiety could be prevented, as it is known for effects of mindfulness in coping with other kinds of anxiety (for a meta-analysis see Hofmann, Sawyer, Witt, & Oh, 2010).

Connecting these findings, less cultural worldview defense aiming at excluding others or devaluating them was found, if persons either have the ability to perceive rather than suppress existential fears or the confrontation with death is connected to instructions to processing existential fears relying on a broad network. These instructions could reflect self-access and may help even state-oriented persons to gain self-access even if they wouldn't do it on their own.

This is in line with other authors, suggesting two different systems processing death, a more personalized existential system versus an abstract and categorical existential system (Cozzolino, 2006). The present findings support such differentiation, by showing that some persons are able to access the self, the personalized existential system, in a confrontation with death. These findings could give a first clue, why mortality salience provokes such different behaviors like aggression (e.g. McGregor et al., 1998) on the one side and more fair behavior (e.g. Van den Bos, 2001) on the other side as they are processed in different systems. These different systems can additionally be divided in high-and low-processing systems. Accessing the self under mortality salience could be one strategy of high-level processing, resulting in defenses of values which are significantly connected to the self. Self-access under mortality salience would be needed to recall personal values and motives even in the face of death.

In contrast, low-level processing could explain more automatic behavior relying on more routines under mortality salience. Next to an activation of personal values, people have the alternative to rely on automatic overlearned behavior to recall norm-oriented behavior. Different cultural norms could be learned in early childhood and through the entire life without having to critically analyze these norms. In German one says "das macht man so", which could be translated as "one just does it that way". That means, without a serious discussion of different values, norm-oriented behavioral routines are expressed in an occurring situation. Referring to cultural worldview, one example could be, that the own culture is praised because one does it that way and one has always done it that way. An

activation of a personal network of values is not needed for such stimulus-reaction interactions. This differentiation between high-level and low-level processing systems could maybe help to close the gap between findings in terror management research and contradicting findings in research on posttraumatic growth (see Chapter 2).

The current findings support such differentiations into different systems processing mortality salience, as various effects of mortality salience have an impact on a rather implicit than explicit system, like the anxiety buffer of implicit self-esteem (Burke et al., 2012), the effects of mortality salience on implicit prejudice (Quirin, Bode, Luckey, Pyszczynski, & Kuhl, 2014) and now these present findings on implicit affect under mortality salience.

Additionally, if people would process mortality salience in that personalized existential system or the extension memory, respectively, this could have various advantages. In coping with a terminal illness, thinking about meaning of one's own life and death was found to be helpful (Bower et al., 1998). That means, using larger networks of meaning could foster processes which help in coping with the reality of a limited time. Moreover, in Chapter 4, indicators of self-access were assessed which are strongly connected to well-being and personal growth, like the ability to establish need-congruent goals (Baumann et al., 2005; Brunstein et al., 1998; Schüler et al., 2008, 2009). A loss of self-access is accompanied by an increasing alienation that means the inability to access personal needs and to establish goals which satisfy these needs. In consequence, different actions are no longer matching the personal motivational system of one person which could result in psychosomatic symptoms (Baumann et al., 2005; Sachse, 2005). That means, losing access to the self in the face of death increases the possibility of alienation which itself could result in a decrease of psychological well-being.

At this point, one might object and point out that everyday reminders of death are short and by that lack that kind of impact on a person's life. However, although each encounter with death-reminders is short, they occur in our everyday-life again and again, and

by that repeatedly provoke defense mechanisms. Moreover, at least at some point in life everyone has to cope with his own mortality, in most cases triggered by stronger death-reminders. It is fascinating, that little cues reminding of mortality don't lead people to change their life considering more satisfying behavior or showing personal growth, whereas a confrontation with a limited-time perspective, for example a terminal illness, can provoke a change of priorities (Taylor, 1983; Bower et al., 1998) or regret (Tomer & Eliason, 1996; 2005).

This could be due to the fact that our own mortality is not integrated into the self and by that has no longtime effect on our behavior. The impact of death or death-reminders just dissipates. In contrast, if people are either able to gain access to the self on their own or find helpful situations, for example one might consider an environment of personal appreciation or emotional warmth (Kuhl, 2001, Rogers, 1951, Sachse, 2006), to access the large network of personal values and experiences then personal growth in the face of death should be possible. Existential fears would be no longer suppressed in consciousness but could provoke a review of life, maybe guided by questions like: Am I happy with my life? Does it satisfy my needs? What would I change?

Although the present thesis found higher self-access under mortality salience for action-oriented persons the later consequences of course remain unclear. The connection to defense strategies like cultural worldview defense was not part of this thesis even though with the actual findings it would be worthwhile to explore effects of self-access on cultural worldview defense. This point is elaborated in more detail in the following paragraph regarding limitations of the present thesis.

5.3 Limitations

Of course, these results are limited, first of all, by the methods that were used to assess implicit negative affect and self-access under mortality salience. Actually, the found differential effect of increased implicit anxiety under mortality salience compared to implicit sadness is a first finding of any affective response to reminders of death, and of course needs further replication and research. The same is true for the missing main effect in Chapter 2. The described dissociation of affective and cognitive response needs replication as well, and it would be fascinating to research the effects of higher implicit negative affect versus higher accessibility of death-related thoughts under mortality salience on cultural worldview defense.

Additionally, the results described in Chapter 4 are limited in different ways. The effect of higher motive congruence for action-oriented persons under mortality salience in Study 1, and a higher self-infiltration for state-oriented persons in Study 2 were missing. As already discussed in Chapter 4, these results cannot be explained finally. Two explanations are already given; the first is that these differences are due to different measurements of self-access. In a second attempt to explain these results, one may consider aspects of the personality dimension of action-orientation itself. Most important seems to be the context sensitivity which is part of action-orientation: The regulation of negative affect is not an automatic process initiated by different situational cues, however, it is perceived as *intuitive* self-regulation which considers a large amount of information. Koole and Jostmann (2004) discussed this context sensitivity as one of four important characteristics of intuitive affect-regulation. That means, action-oriented persons are highly sensitive in which situations self-regulation is needed, for example those which are highly threatening the self. In contrast, state-oriented persons lack this ability, feeling overwhelmed by various threatening situations like both death and pain.

Of course, this needs further exploration by identifying methodological or situational cues responsible for the complex picture of self-access under mortality salience. Next to these limitations, a theoretical limitation is obvious: Whereas the thesis focused on affect and self-regulation in the face of death, nothing is said about how persons cope with low abilities in self-regulation.

5.3.1 How do State-Oriented Persons Cope with Mortality Salience?

It remains an open question, how state-oriented persons cope with mortality salience when coping by accessing the self is impossible. As action-oriented persons were found to gain self-access and by that to a higher (top-down) processing system (Baumann & Kuhl, 2003; Koole & Jostmann, 2004; Kuhl, 2000, 2001), state-oriented persons were found to lose access to this system. One assumption could be that state-oriented persons rely on low-level processing in a confrontation with death-reminders, described as regression by Kuhl (2001). Especially the system of *intuitive behavior control* could be useful in coping with existential fears.

Many coping strategies summarized as cultural worldview defense seem to have less to do with cultural values, like smoking (Arndt et al., 2013; Hansen et al., 2010; Martin & Kamins, 2010) or driving risky (Taubman-Ben-Ari et al., 1999; Taubman-Ben-Ari et al., 2000). One alternative explanation for these behaviors may be that these coping strategies rely on lower (bottom-up) processes described by the system of *intuitive behavior control*. This could also explain the occurrence of anxious or compulsive behavior (Strachan et al., 2007) under mortality salience.

Having no connection to a cultural worldview, these behaviors are explained by TMT as a failure in coping processes for people who have no possibility to cope either by cultural

worldview or a self-esteem boost. However, these responses to mortality salience could as well be explained by coping through overlearned, automatized behavioral routines. In fact, the occurrence of cultural worldview defense does not allow a conclusion to which system is processing mortality salience. Whereas cultural values may be highly integrated into a broad network of personal values and experiences, that means, integrated into the self (see previous paragraphs), they could in contrast just initiate behavioral routines, that means initiating the intuitive behavior control.

The differentiation between these systems may help to explain the divergent results in terror management theory, by having mortality salience triggering behavior both devaluating others (e.g. Greenberg et al., 2001) and being more tolerant (Greenberg at el., 1992), or behavior which seems to have less connection to culture like eating (Hirschberger, & Ein-Dor, 2005), attitudes toward breast feeding (Cox, Goldenberg, Arndt, & Pyszczynski, 2007), or even dangerous habits like driving under the influence of alcohol (Miller & Mulligan, 2002), risky sexual behavior (Taubman- Ben-Ari et al., 2002) or drinking alcohol (Jessop & Wade, 2008; Shehryar & Hunt, 2005). It is one hypothesis that they rely on intuitive behavior for coping mortality salience, yet this assumption was not tested. This question of course requires further research.

5.4 Outlook and Suggestions for Future Research

As already pointed out, the connection of affective responses on reminders of death and following defense strategies is an important issue for further research. Although suggesting that existential fears provoke cultural worldview defense, this assumption has not been tested yet, comparable to the assumption that death-reminders arouse unconscious existential fears.

This thesis revealed existential fears and higher self-access in action-oriented persons. However, state-oriented persons hold the wolf by the ears because they response with high implicit negative affect towards reminders of death but are unable to regulate it on their own. This could lead research in two different directions by either focusing on coping strategies state-oriented persons use or situational cues which enable them to cope like action-oriented persons.

As discussed above, one possibility is that state-oriented persons rely on the system of intuitive behavior control to cope with mortality salience. This would connect to different findings in terror management research. Yet, next to the system of intuitive behavior control and the extension memory processing mortality salience, the other systems of intention memory or object recognition to have an impact on coping with death-related fears. The process of rationalizing death seems to be connected to the intention memory, including the fact that some aspects of death are handled, like the empiric fact that every living creature has to die, whereas other aspects are dissociated like the emotional impact of such information. At this point, self-control is helpful, facilitating the suppression of unwanted thoughts and feelings after a confrontation with death. Rationalization and suppression are strategies suggested to occur directly after a confrontation with death (proximal defenses).

Furthermore, negative affective states activate the object recognition system. This should result in higher processing of odd or negative information. Therefore, a detailed elaboration of which system is activated at which time in the process of coping with mortality salience would be useful. Especially the involvement of different systems in defending cultural values would be fascinating, as it could help to reveal mechanisms of coping with mortality salience and could make defense strategies more predictable. Additionally, defenses could be differentiated in helpful or maladaptive in the process of coping with death-reminders and interventions could be conceived to support beneficial coping strategies.

Next to an exploration of actual coping process of state-oriented persons the effects of such coping processes could lead further research. Regarding the previous Chapters coping through low-level processing could reveal negative outcomes if routines are maladaptive or lasting death-reminders lead to a chronical inhibited self-access in state-oriented persons. However, longitudinal studies on death-reminders and their effect on peoples' life would be needed to explore these maladaptive characteristics of coping thought the intuitive behavior control system. Connected to this question, is the issue of situational cues which could be helpful for state-oriented persons like an external induction to reflect death, or social support (Koole et al., 2005) or close relationships (e.g. Cox & Arndt, 2012; Florian et al., 2002; Smieja, Kalaska, & Adamczyk, 2006) which may prevail cultural worldview defenses (Wisman & Koole, 2003). This could enable state-oriented persons to access the self and integrate the knowledge about their mortality into this large network of own experiences and by that enable them to grow in the face of death (Baumann, 2010).

At last, whereas negative consequences of state-oriented persons are already discussed one might speculate if there are any disadvantages in gaining self-access under mortality salience too. Or stated in other way: Could it be useful not to gain self-access in the face of death? Koole, Kuhl, Jostman and Vohs (2005) have discussed that relying on low-level processing could be advantage if very fast responses are needed or the environment is very unpredictable. In an evolutionary perspective the milliseconds which differentiate between high-level and low-level processing could be critical when taking flight from a danger. Today one might speculate if there are situations in which this is an advantage too. Maybe in professions in which death-reminders are common and a fast behavior is needed, like for paramedics or firefighter, it is useful to rely rather on specific overlearned routines then gaining access to the self and develop an individual approach to this situation. Of course, this is speculation but it would be worthwhile to explore such advantages and disadvantages of different reactions on reminders of death.

5.5 Conclusion

As we are reminded of our mortality by various situational cues in our everyday life, one would expect that these reminders have an emotional impact on us and that people differ in dealing with such emotions. This thesis demonstrated that a confrontation with death indeed arouses anxiety in people and by that complements the demonstration of higher death-thought-accessibility in terror management research by showing an affective response towards death. This affective response was found to be implicit and characterized as implicit anxiety rather than sadness for example.

Furthermore, affective responses depend highly on a person's ability to self- regulate negative affect. Although further research is needed to explore coping strategies connected to state-orientation, the ability of action-orientation to access the self in confrontation with existential fears shows the possibility of integrating the fact that life is limited into a network of personal meaning. By that, within the existential fears aroused by the knowledge of the finiteness of our lives lies the opportunity for personal growth.

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Summary

Death is perceived as a severe threat to the self. Although it is certain that everyone has to die, people usually don't think about the finiteness of their life. Everything reminding of death is ignored, rationalized and death-related thoughts and fears are pushed out of mind (TMT; Pyszczynski et al., 1999). Terror management theory has initiated various studies demonstrating that people try to gain at least symbolic immortality by identifying with and defending the own culture. By doing that TMT suggests that unconscious existential fears aroused by reminders of death are handled. Whereas various studies demonstrated cultural worldview defense, some of them revealed destructive behavior under mortality salience. People under mortality salience tend to criticize others who threaten their worldview and tolerate more aggression against cultural outsiders. Some studies even displayed self-destructive behavior like risky sexual behavior, excessive drinking or obsessive behavior under mortality salience. Yet, it might be a hasty conclusion that in the face of death people show their aggressive and destructive side. Research has also identified other effects of mortality salience, like more tolerance, fair behavior and an adoption of intrinsic goals under mortality salience. These contradictory results might as well display the gap between terror management theory and research on posttraumatic growth: Death bears the ability of triggering destructive and growth-related behavior at the same time.

A chance for personal growth in the face of negative events lies within the ability of switch between emotional states (emotional dialectic; Kuhl, 2001). People differ in their ability of switching between emotional states, especially in their ability to regulate affect and to access their self-system. As death is assumed to arouse existential fears, the ability to regulate such fears is particularly important, higher self-access could be relevant in defending central personal values maybe even without being destructive or self-destructive.

This thesis aimed at showing existential fears under mortality salience and effects of affect regulation under mortality salience. For this purpose, the theoretical background including terror management theory and the theory of personality systems interaction is presented in Chapter 1. Whereas anxiety aroused by death was assumed but not demonstrated until now, Chapter 2 focuses on evidence for existential fears under mortality salience. As the affective response towards death was missing, of course the connection to self-regulation of affect was missing too. Chapter 3 addressed this problem. In this Chapter, the effect of self-regulation on affect under mortality salience is tested.

Whereas Chapter 2 and 3 explore the affective reaction on reminders of mortality depending on affect-regulatory abilities, Chapter 4 included mechanisms of self-regulation. According to PSI theory, self-regulation is accompanied by an increase of self-access, so that studies presented in Chapter 4 assess different indicators of self-access. Self-access is a promising candidate in explaining contradictory findings in terror management research, as it is possible to defend central personal values without being destructive or self-destructive.

Finally, in Chapter 5 the impact of findings for the psychological knowledge, the theoretical implications and limitations of the present thesis are discussed. Futhermore, suggestions for further research are given.

Zusammenfassung

Der Tod ist eine ernsthafte Bedrohung für das Selbst. Auch wenn sicher ist, dass jeder sterben muss, denken Menschen in der Regel nicht über die Endlichkeit ihres Lebens nach. Alles, was an den Tod erinnert wird ignoriert, rationalisiert und tobesbezogene Gedanken und Ängste warden aus dem Bewusstsein gedrängt (TMT; Pyszczynski et al., 1999). Die Terror Management Theorie hat verschiedene Studien angestoßen, die zeigen, dass Menschen versuchen wenigstens symbolisch Unsterblichkeit zu erlangen, indem sie sich mit ihrer Kultur identifizieren und diese verteidigen. Der TMT nach werden so unbewusste existentielle Ängste bewältigt, die durch eine Konfrontation mit dem Tod ausgelöst werden. Verschiedene Studien zeigen die Verteidigung des kulturellen Weltbildes, wobei einige auch destruktives Verhalten unter Mortalitätssalienz nachweisen. Menschen unter Mortalitätssalienz neigen dazu andere zu kritisieren, die ihre Kultur in Frage stellen, und tolerieren eher Aggressionen gegenüber kulturellen Außenseitern. Manche Studien zeigen sogar selbstzerstörerisches Verhalten wie ein riskantes Sexualverhalten, exzessives Trinken von Alkohol oder zwanghaftes Verhalten unter Mortalitätssalienz. Es mag aber voreilig sein zu glauben, dass angesichts des Todes Menschen ihre aggressive und destruktive Seite zeigen. Die Forschung hat auch andere Verhaltensweisen ermittelt, wie mehr Toleranz und Fairness und die Übernahme von intrinsischen Zielen unter Mortalitätssalienz. Diese gegensätzlichen Befunde spiegeln auch die Kluft zwischen Forschung zur Terror Management Theorie und zu posttraumatischen Wachstum wieder: Die Konfrontation mit dem Tod birgt sowohl die Möglichkeit für destruktives als auch wachstumsorientiertes Verhalten.

Eine Möglichkeit zu Wachstum angesichts von negativen Ereignissen liegt in der Fähigkeit zwischen verschiedenen emotionalen Zuständen zu wechseln (emotionale Dialektik; Kuhl, 2001). Menschen unterscheiden sich in ihrer Fähigkeit zwischen emotionalen

Zuständen zu wechseln, insbesondere in ihrer Fähigkeit Affekt zu regulieren und Zugang zu ihrem Selbst zu erlangen. Da die Konfrontation mit dem Tod existentielle Ängste auslösen soll, ist die Fähigkeit solche Ängste zu regulieren besonders wichtig, dabei könnte ein hoher Selbstzugang auch bedeuten, dass zentrale persönliche Werte verteidigt werden ohne ein destruktives oder selbstzerstörerisches Verhalten zu zeigen.

Diese Arbeit zielt insbesondere auf die Demonstration von existentiellen Ängsten unter Mortalitätsalienz und den Auswirkungen von Selbstregulation von Affekt ab. Der theoretische Hintergrund unter Einbezug der Terror Management Theorie und der Theorie der Persönlichkeits-System-Interaktionen wird hierfür in Kapitel 1 vorgestellt. Da bislang todesbezogene Ängste zwar angenommen, aber nicht gezeigt wurden, zielt Kapitel 2 auf einen Nachweis der existentiellen Ängste unter Mortalitätssalienz ab. Da bislang die affektive Reaktion auf den Tod fehlte, fehlt natürlich auch die Verbindung zur Selbstregulation von Affekt. Kapitel 3 beleuchtet dieses Problem. Dabei soll in diesem Kapitel der Einfluss von Selbstregulation auf Affekt unter Mortalitätssalienz selbst untersucht werden.

Während Kapitel 2 und 3 also die affektive Reaktion auf Erinnerungen an die eigene Sterblichkeit in Abhängigkeit von Fähigkeiten zur Selbstregulation untersuchen, bezieht Kapitel 4 *Mechanismen* der Selbstregulation mit ein. Da Selbstregulation laut PSI Theorie mit einem erhöhten Selbstzugang einhergeht, werden in den in Kapitel 4 vorgestellten Studien verschiedene Indikatoren für Selbstzugang erhoben. Dabei ist Selbstzugang vielversprechend in der Erklärung von gegensätzlichen Befunden in der Forschung zum Terror Management, da hierbei eine Verteidigung von persönlich zentralen Werten ohne destruktives oder selbstzerstörerisches Verhalten möglich ist.

Abschließend werden in Kapitel 5 die Bedeutung der Befund für die Psychologie, die theoretischen Implikationen sowie die Grenzen der vorliegenden Arbeit diskutiert. Darüber hinaus werden Überlegungen für weiterführende Forschung angestellt.

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Erklärung

Hiermit erkläre ich, dass ich die vorliegende Arbeit ohne unzulässige Hilfe Dritter und ohne Benutzung anderer als den angegebenen Hilfsmitteln angefertigt habe. Die aus anderen Quellen direkt oder indirekt übernommenen Angaben und Konzepte sind unter Angabe der Quelle gekennzeichnet.

Die Arbeit wurde bisher weder im In- noch im Ausland in gleicher oder ähnlicher Form einer anderen Prüfungsbehörde vorgelegt.

Trier, den

C. Lüdecke

Appendix

Appendix A: The Operant Motive Test (OMT; Kuhl & Scheffer, 1999)

Fragebogen-Nr.:_____

Datum:_____

Alter:_____ Jahre,   Geschlecht: [ ]w   [ ]m

Im folgenden sehen Sie einige Bilder. Jede Bildsituation soll eine alltägliche Lebenssituation darstellen.

Bitte sehen Sie sich jedes Bild zunächst genau an und überlegen Sie sich dann eine kurze **Geschichte** oder eine **Szene**, die die dargestellte Situation näher beschreibt. Der Inhalt der Geschichte bleibt ganz Ihnen überlassen; es gibt keine richtigen oder falschen Geschichten. Lassen Sie Ihrer **Phantasie** freien Lauf, die Originalität der Geschichte spielt keine Rolle.

Eine der Personen auf dem Bild soll darin die **Hauptrolle** spielen; kennzeichnen Sie diese Person bitte mit einem **Kreuz**. Sie müssen Ihre Geschichte nicht aufschreiben, sondern nur jeweils die vier Fragen, die Sie neben jedem Bild finden und die sie sich auf Ihre Hauptperson beziehen, beantworten.

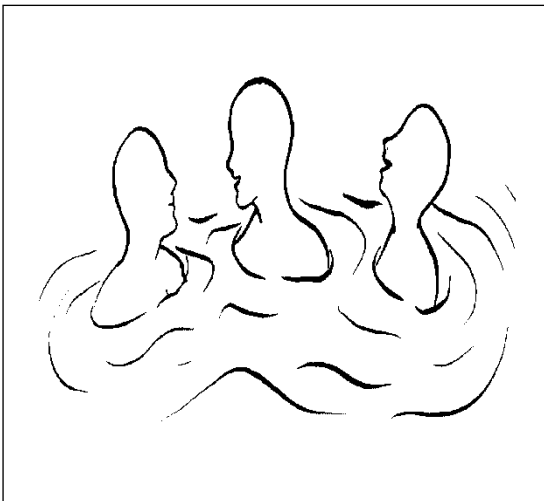*Beginnen Sie bitte mit Bild 1 und gehen Sie dann der Reihe nach vor.*

1)
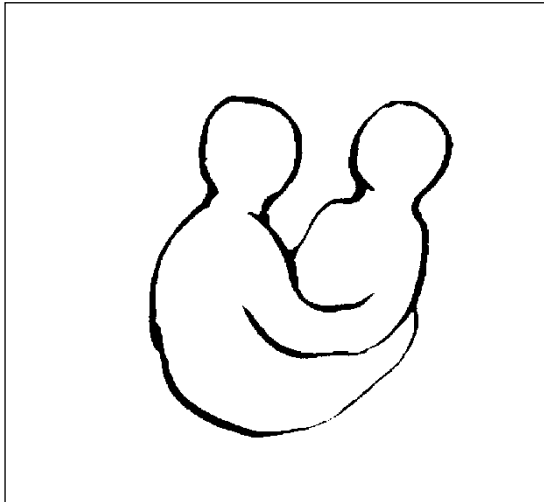
Was ist für die Person in dieser Situation wichtig und was tut sie?

_____

_____

Wie fühlt sich die Person?

_____

_____

Warum fühlt sich die Person so?

_____

2)

Was ist für die Person in dieser Situation wichtig und was tut sie?

_____

_____

Wie fühlt sich die Person?

_____

_____

Warum fühlt sich die Person so?

_____

3)
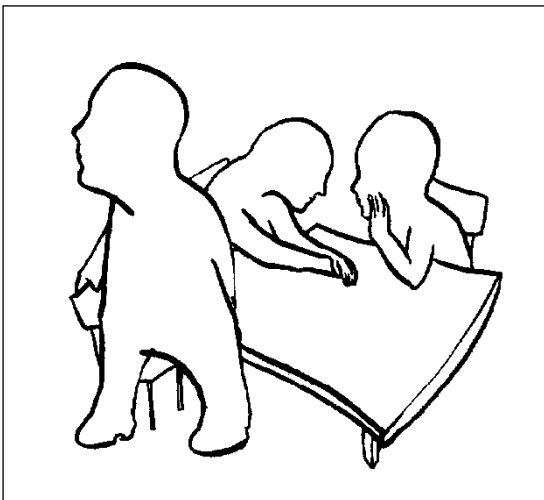
Was ist für die Person in dieser Situation wichtig und was tut sie?

_____

_____

Wie fühlt sich die Person?

_____

_____

Warum fühlt sich die Person so?

_____

4)
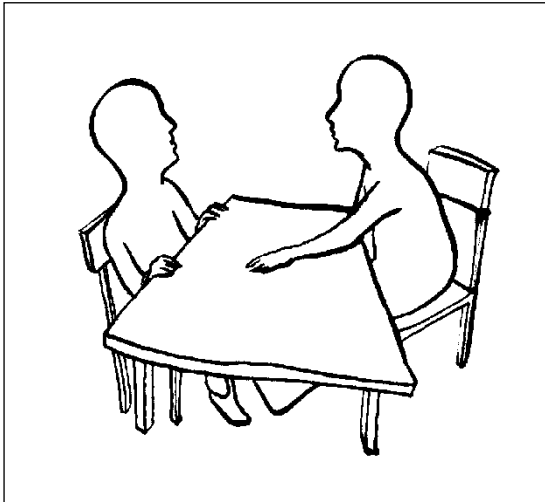
Was ist für die Person in dieser Situation wichtig und was tut sie?

_____

_____

Wie fühlt sich die Person?

_____

_____

Warum fühlt sich die Person so?

_____

5)
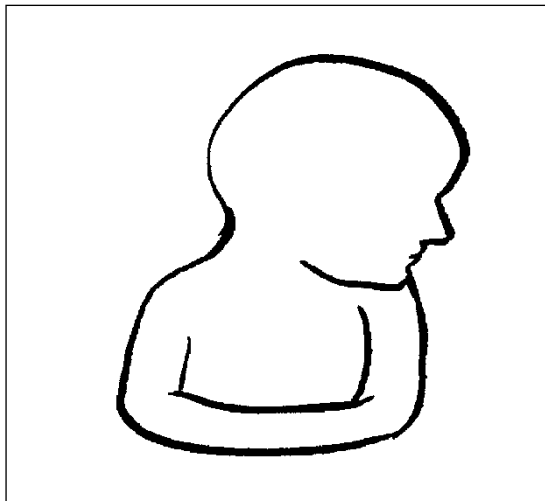
Was ist für die Person in dieser Situation wichtig und was tut sie?

_____

_____

Wie fühlt sich die Person?

_____

_____

Warum fühlt sich die Person so?

_____

6)
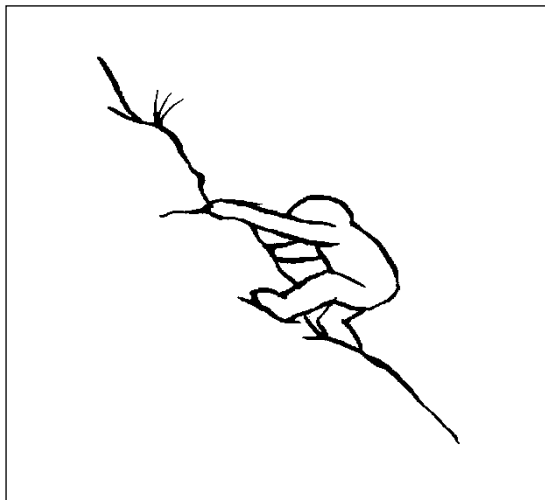
Was ist für die Person in dieser Situation wichtig und was tut sie?

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_____

Wie fühlt sich die Person?

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_____

Warum fühlt sich die Person so?

_____

7)
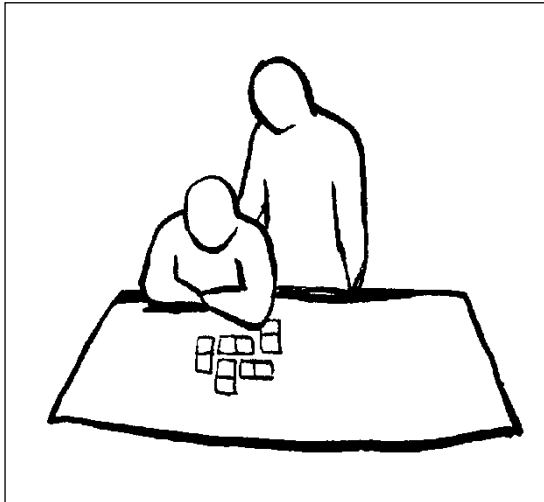
Was ist für die Person in dieser Situation wichtig und was tut sie?

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Wie fühlt sich die Person?

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Warum fühlt sich die Person so?

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8)
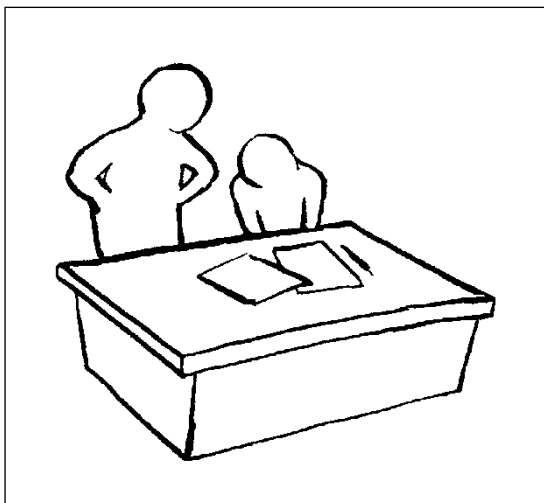
Was ist für die Person in dieser Situation wichtig und was tut sie?

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Wie fühlt sich die Person?

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Warum fühlt sich die Person so?

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9)
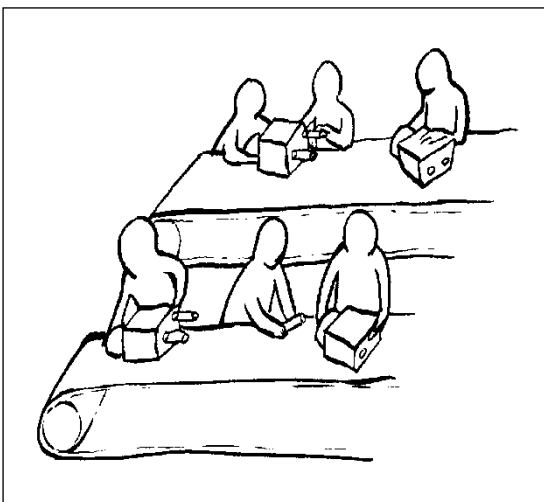
Was ist für die Person in dieser Situation wichtig und was tut sie?

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Wie fühlt sich die Person?

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Warum fühlt sich die Person so?

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10)
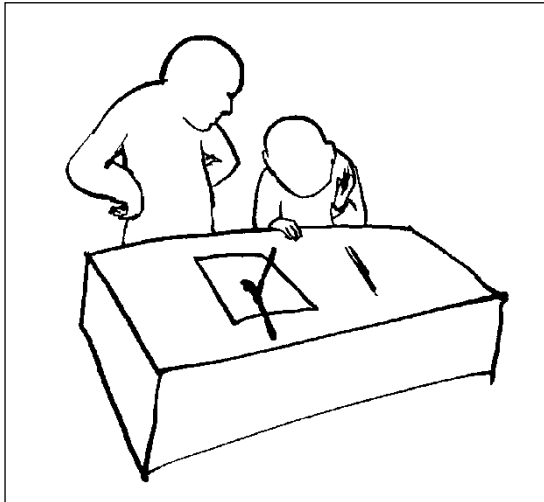
Was ist für die Person in dieser Situation wichtig und was tut sie?

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Wie fühlt sich die Person?

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Warum fühlt sich die Person so?

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11)
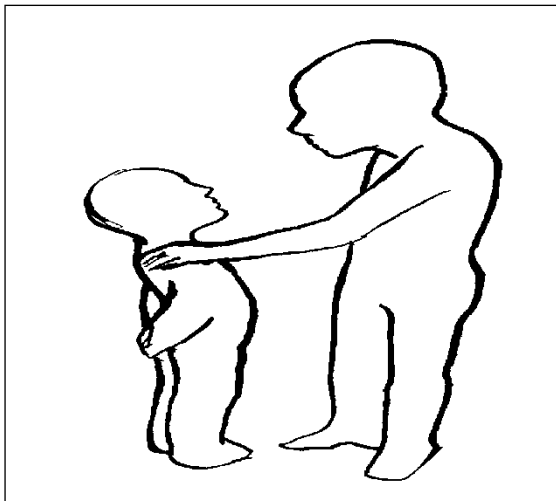
Was ist für die Person in dieser Situation wichtig und was tut sie?

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Wie fühlt sich die Person?

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Warum fühlt sich die Person so?

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12)
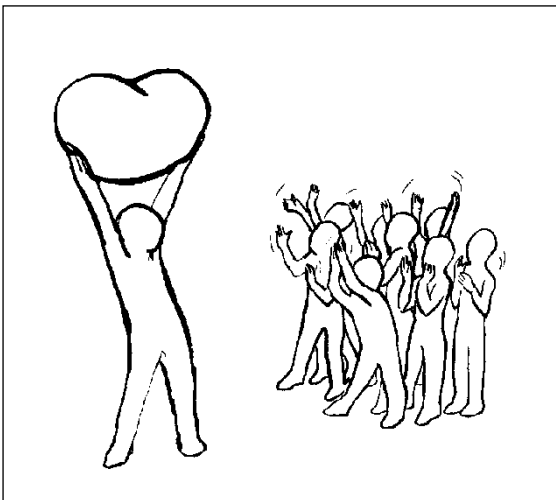
Was ist für die Person in dieser Situation wichtig und was tut sie?

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Wie fühlt sich die Person?

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Warum fühlt sich die Person so?

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13)
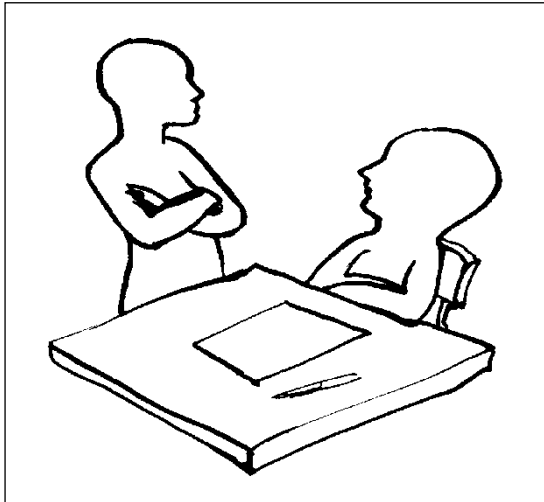
Was ist für die Person in dieser Situation wichtig und was tut sie?

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Wie fühlt sich die Person?

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Warum fühlt sich die Person so?

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14)
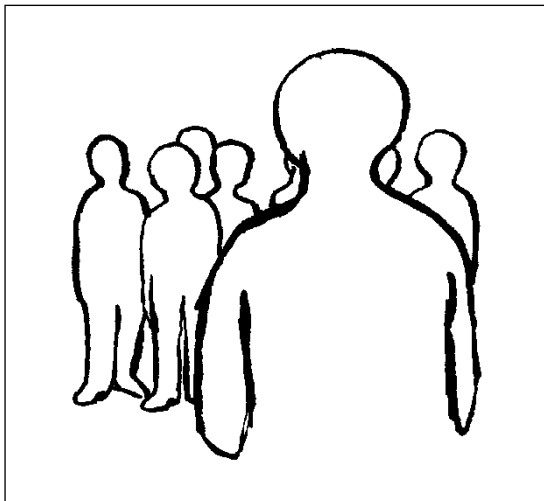
Was ist für die Person in dieser Situation wichtig und was tut sie?

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Wie fühlt sich die Person?

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Warum fühlt sich die Person so?

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15)
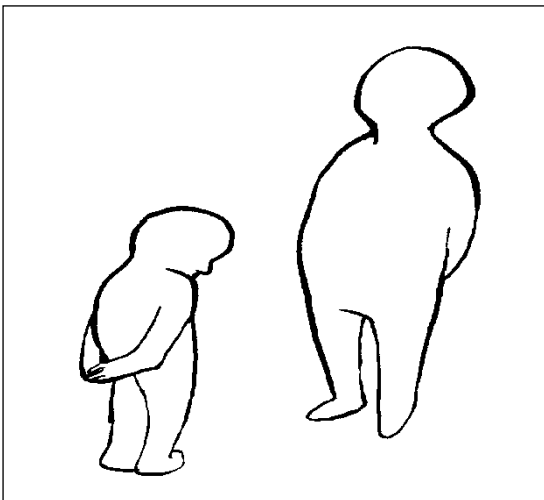
Was ist für die Person in dieser Situation wichtig und was tut sie?

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Wie fühlt sich die Person?

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Warum fühlt sich die Person so?

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Appendix B: The Motive Enactment Test (MET, Kuhl, 1999)

Fragebogen-Nr.:_____   Datum:_____

Alter:_____   Geschlecht: ( )w   ( )m

Schulabschluß/Studiengang:_____

Ausbildung/Beruf:_____

Bitte machen Sie die Angaben spontan, ohne lange nachzudenken.	trifft gar nicht zu	trifft etwas zu	trifft über- wiegend zu	trifft ausge- sprochen zu
1. Wie ich mich einem Menschen gegenüber verhalte, ist irgendwie von all dem bestimmt, was ich mit ihm schon erlebt habe.	( )	( )	( )	( )
2. Ich mag körperliche Nähe zu anderen Menschen.	( )	( )	( )	( )
3. Ich mache mir oft Gedanken darüber, was mein Verhalten bei Freunden oder Partner/In bewirkt.	( )	( )	( )	( )
4. Wenn ich auf Ablehnung stoße, bin ich wie gelähmt.	( )	( )	( )	( )
5. Wenn ich meine Meinung äußere, fühle ich mich meist ganz frei, das zu sagen, was ich wirklich vertreten kann.	( )	( )	( )	( )
6. Wie ich meinen Stil zeigen kann, spüre ich immer ganz intuitiv.	( )	( )	( )	( )
7. Wenn ich eine einflußreiche Position erreicht habe, drängt es mich immer weiter nach oben.	( )	( )	( )	( )
8. Wenn andere nicht von selbst merken, was ich brauche, verzichte ich lieber darauf.	( )	( )	( )	( )
9. Wenn ich an meine bisherigen Leistungen denke, fühle ich mich ganz wohl.	( )	( )	( )	( )
10. Neue Aufgaben gehe ich ganz aus dem Gefühl an.	( )	( )	( )	( )
11. Je schwieriger eine Aufgabe wird, desto zäher wird mein Durchhaltevermögen.	( )	( )	( )	( )
12. Auch bei noch so guten Leistungen sehe ich immer die kritischen Punkte.	( )	( )	( )	( )
13. Es macht mir Freude, mich mit anderen Menschen auszutauschen.	( )	( )	( )	( )
14. Oft suche ich regelrecht die Auseinandersetzung mit anderen.	( )	( )	( )	( )
15. Wenn ich eine schwierige Aufgabe gelöst habe, suche ich mir am liebsten gleich die nächste Herausforderung.	( )	( )	( )	( )
16. Wenn eine Beziehung belastet wird, wachsen mir ganz neue Kräfte zu.	( )	( )	( )	( )
17. Oft spüre ich das intensive Bedürfnis anderen nah zu sein.	( )	( )	( )	( )

	trifft gar nicht zu	trifft etwas zu	trifft über-wiegend zu	trifft ausge-sprochen zu
18. Wenn ich eine Partnerschaft oder Freundschaft habe, überlege ich oft, was man noch besser machen kann.	( )	( )	( )	( )
19. Wenn mich jemand nicht mag, geht mir das lange nach.	( )	( )	( )	( )
20. Wenn mir jemand über den Mund fährt, habe ich gleich die passende Reaktion parat.	( )	( )	( )	( )
21. Ich fühle mich anderen oft überlegen.	( )	( )	( )	( )
22. Wenn ich jemanden von etwas überzeugen will, überlege ich mir gut, auf was er am ehesten anspricht.	( )	( )	( )	( )
23. Wenn jemand sehr selbstbewußt auftritt, halte ich mich eher zurück.	( )	( )	( )	( )
24. Bei den Aufgaben, die ich im Alltag bearbeite, fühle ich mich ziemlich frei, so vorzugehen, wie ich es für richtig halte.	( )	( )	( )	( )
25. Ich muß neue Aufgaben mögen, sonst läuft nichts.	( )	( )	( )	( )
26. Im Leistungsbereich wähle ich mir am liebsten die schwierigsten Aufgaben aus.	( )	( )	( )	( )
27. Fehlschläge nehmen mir meist völlig den Mut.	( )	( )	( )	( )
28. Ich fühle mich in meinem Element, wenn ich mit anderen Menschen plaudern kann.	( )	( )	( )	( )
29. Andere haben es oft gern, wenn ich sage, wo es langgeht.	( )	( )	( )	( )
30. Wenn es eine schwierige Aufgabe anzupacken gilt, melde ich mich oft freiwillig.	( )	( )	( )	( )
31. Wenn ich in eine Gruppe komme, entwickle ich schnell ein gutes Gespür dafür, welche Themen jede einzelne Person ansprechen und welche nicht.	( )	( )	( )	( )
32. Menschen in meiner Nähe nehmen meist meine ganze Aufmerksamkeit ein.	( )	( )	( )	( )
33. In einer Freundschaft überlege ich mir oft, welche Folgen mein Verhalten für die Beziehung hat.	( )	( )	( )	( )
34. Wenn jemand unfreundlich zu mir ist, macht mich das ganz fertig.	( )	( )	( )	( )
35. Wenn ich mit meiner Auffassung nicht durchkomme, drehe ich erst richtig auf.	( )	( )	( )	( )
36. Stil ist mir sehr wichtig im Leben.	( )	( )	( )	( )
37. Wenn es um Macht geht, ist für mich nur die erste Position gut genug.	( )	( )	( )	( )
38. Auch wenn ich mit einem Menschen ganz gut auskomme, sehe ich meistens Punkte, in denen ich unterlegen bin.	( )	( )	( )	( )
39. Mit meinen bisherigen Leistungen im Leben bin ich recht zufrieden.	( )	( )	( )	( )

	trifft gar nicht zu	trifft etwas zu	trifft über- wiegend zu	trifft ausge- sprochen zu
40. Ich kann gute Leistungen nur erbringen, wenn ich spontan Lust dazu habe.	( )	( )	( )	( )
41. Am meisten reizen mich die ganz schwierigen Aufgaben.	( )	( )	( )	( )
42. Auch wenn mir etwas gelungen ist, sehe ich immer noch irgendetwas, das noch nicht ganz in Ordnung ist.	( )	( )	( )	( )
43. Menschliche Nähe ist mir in meinem Leben wichtiger als Leistung.	( )	( )	( )	( )
44. In meinen Tagträumen spiele ich oft die Heldenrolle.	( )	( )	( )	( )
45. Wenn ich stundenlang an einer schwierigen Sache arbeiten kann, bin ich rundum glücklich.	( )	( )	( )	( )
46. Ich finde immer wieder Menschen, mit denen ich echte Gefühle austauschen kann.	( )	( )	( )	( )
47. Im Umgang mit anderen lasse ich mich ganz von meinen Gefühlen leiten.	( )	( )	( )	( )
48. Von einer Partnerschaft erwarte ich viel.	( )	( )	( )	( )
49. Wenn ich jemanden kennenlerne, habe ich oft Angst, abgelehnt zu werden.	( )	( )	( )	( )
50. Ich bin sehr schlagfertig.	( )	( )	( )	( )
51. Gefühle der Überlegenheit tun mir gut.	( )	( )	( )	( )
52. Ich strebe zu immer höheren Führungs-positionen.	( )	( )	( )	( )
53. Es fällt mir oft schwer, einzuschätzen, ob ich gegen einen anderen Menschen ankomme oder nicht.	( )	( )	( )	( )
54. Mit den meisten Aufgaben, die ich übernehme, kann ich mich voll und ganz identifizieren.	( )	( )	( )	( )
55. Wenn man Leistung von mir erwartet, verliere ich die Lust.	( )	( )	( )	( )
56. Mein Leistungswille ist unersättlich.	( )	( )	( )	( )
57. Ein Mißerfolg kann mir total den Schwung nehmen.	( )	( )	( )	( )
58. Ich mag es, mit netten Menschen über alles mögliche zu reden.	( )	( )	( )	( )
59. Wenn ich weiß, was ich will, möchte ich auch andere dafür begeistern.	( )	( )	( )	( )
60. Oft suche ich mir ganz spontan eine Beschäftigung, bei der ich meine Fähigkeiten prüfen kann.	( )	( )	( )	( )

Appendix C: Mood Adjective List

Kodierung:_____   Datum:_____   Alter:_____ Jahre,   Geschlecht: [ ]w   [ ]m

Bitte schätzen Sie anhand der aufgelisteten Eigenschaftswörter ein, wie Sie sich im Moment fühlen. Entscheiden Sie spontan ohne lange nachzudenken, welche der vier Antwortmöglichkeiten am ehesten auf Sie zutrifft.

Jetzt - in diesem Moment - fühle ich mich:	*überhaupt nicht*	*etwas*	*ziemlich*	*sehr*
1) **freudig**	( )	( )	( )	( )
2) **hilflos**	( )	( )	( )	( )
3) **aktiv**	( )	( )	( )	( )
4) **angespannt**	( )	( )	( )	( )
5) **träge**	( )	( )	( )	( )
6) **ruhig**	( )	( )	( )	( )
7) **aggressiv**	( )	( )	( )	( )
8) **gutgelaunt**	( )	( )	( )	( )
9) **ratlos**	( )	( )	( )	( )
10) **wach**	( )	( )	( )	( )
11) **beunruhigt**	( )	( )	( )	( )
12) **lahm**	( )	( )	( )	( )
13) **sicher**	( )	( )	( )	( )
14) **wütend**	( )	( )	( )	( )
15) **fröhlich**	( )	( )	( )	( )
16) **gehemmt**	( )	( )	( )	( )
17) **tatkräftig**	( )	( )	( )	( )
18) **verkrampft**	( )	( )	( )	( )
19) **entspannt**	( )	( )	( )	( )

20) gereizt	( )	( )	( )	( )
21) lustlos	( )	( )	( )	( )
22) traurig	( )	( )	( )	( )
23) ängstlich	( )	( )	( )	( )

Appendix D: Mortality salience versus Hair Loss Induction

Auf der folgenden Seite finden Sie nun eine kurze Aufgabe, im Rahmen derer Sie aufgrund einer Reihe von Informationen zwischen zwei Alternativen auswählen sollen.

Bitte umblättern!

Bei Haarausfall handelt es sich um eine Krankheit, die vielerlei Ursachen haben kann – Hormone, Gene, Umwelt, Psyche, Jahreszeit und vieles mehr. Entscheidend ist zumeist eine frühzeitige und akkurate Behandlung. Neuere Studien haben gezeigt, dass zunehmend auch junge Menschen, Frauen und Männer, von Haarausfall betroffen sind. So hat sich die Zahl der betroffen Fälle gerade bei Menschen zwischen 20 und 30 in den letzten zehn Jahren mehr als verdoppelt. Da Haarausfall für die Betroffenen zumeist sehr unangenehm ist, kommen immer neue Therapien auf den Markt. Welche Behandlung jedoch angewendet werden soll, obliegt in letzter Instanz jedoch der Entscheidung des Patienten/der Patientin.Um eine solche Entscheidungsaufgabe handelt es sich auch in diesem Fall: Bitte versetzen Sie sich einmal in die Lage einer Person mit Haarausfall, die sich für einen der beiden folgenden Behandlungsansätze entscheiden muss:

Zu der **traditionellen Methode** gehört die Anwendung von Tinkturen, die direkt auf die Kopfhaut aufgetragen werden, klassischerweise einer fünfprozentigen Lösung von Minoxidil. Wie das Medikament genau Haarausfall bekämpft, ist allerdings noch nicht klar. Nebenwirkungen sind Rötung, Juckreiz und Schuppen auf der Kopfhaut. Selten gibt es allergische Reaktionen auf einige Inhaltsstoffe. Den Blutdruck beeinflusst Minoxidil nicht, wenn man es in dieser schwachen Konzentration äußerlich anwendet.

Man kann jedoch eine **Alternativmethode** auswählen, die heutzutage an Beliebtheit gewinnt. Dazu gehören die PUVA-Therapie und die topische Immuntherapie. Bei der topischen Immuntherapie löst eine Chemikalie (DCP) eine Allergie aus, lenkt das Immunsystem ab und stoppt so den Haarausfall. DCP ist allerdings meist nur über Hautkliniken erhältlich. Während der Behandlung können die Lymphknoten anschwellen und Pigmentveränderungen entstehen. Nach der Anwendung juckt die Kopfhaut zwei Tage lang, rötet und schuppt sich.

In dem neuesten Bericht des Deutschen Haarforschungszentrums (DHFZ) sind folgende Angaben zu diesen Behandlungsansätzen veröffentlicht worden:

Nach traditioneller Methode:

Von 100 Patienten

   ... haben 90 während der Therapie keinen Haarausfall mehr

   ... berichten 68 über keinen erneuten Haarausfall im 1 Jahr

   ... haben 34 länger als 5 Jahre keinen krankhaften Haarausfall mehr

Nach alternativen Methoden:

Von 100 Patienten

   ... berichten 100 über starke Besserung der Symptomatik während der Therapie

   ... berichten 77 über keinen erneuten Haarausfall im 1 Jahr

   ... haben 22 länger als 5 Jahre keinen krankhaften Haarausfall mehr

---

Bitte entscheiden Sie sich durch Ankreuzen für eine der dargebotenen Methoden:

    Traditionell ☐   Alternativ ☐

Auf der folgenden Seite finden Sie nun eine kurze Aufgabe, im Rahmen derer Sie aufgrund einer Reihe von Informationen zwischen zwei Alternativen auswählen sollen.

Bei einer Krebserkrankung handelt es sich nicht um eine mehr oder weniger beherrschbare chronische Krankheit, sondern in jedem Fall zunächst um eine tödliche Erkrankung. Entscheidend ist zumeist eine frühzeitige und akkurate Behandlung. Neuere Studien haben gezeigt, dass bestimmte Krebsarten (Brustkrebs, Hodenkrebs) zunehmend bei jungen Menschen auftreten. So hat sich die Zahl der Betroffenen gerade bei Menschen zwischen 20 und 30 in den letzten zehn Jahren mehr als verdoppelt. Allerdings können bis zu 20% dieser Patienten geheilt werden, wenn die richtige Therapie angewendet wird. Welche Behandlung jedoch wann angemessen ist, ist häufig eine schwere Entscheidung.

Um eine solche Entscheidungsaufgabe handelt es sich auch in diesem Fall: Bitte versetzen Sie sich einmal in die Lage des Krebspatienten hinein, der sich für einen der beiden folgenden Behandlungsansätze entscheiden muss:

Zu der **traditionellen Methode** gehört eine Kombination von chirurgischem Eingriff und Strahlentherapie. Zunächst werden alle bösartigen Zellen aus dem Körper herausgeschnitten. Meistens ist der Krebs jedoch schon zu weit fortgeschritten, so dass er durch eine Operation nicht mehr beseitigt werden kann. Deshalb kommt die Strahlentherapie zum Einsatz. Dabei werden deshalb sehr kurzwellige intensive Gammastrahlen und Röntgenstrahlen benutzt, um die kranken, entarteten Zellen zu zerstören. Beide Behandlungsmethoden sind mit negativen Begleiterscheinungen verbunden. Besonders leiden Patienten unter der oft langwierigen Strahlentherapie.

Man kann jedoch eine **Alternativmethode** auswählen, die heutzutage an Beliebtheit gewinnt. Dazu gehören die Hyperthermie und Carnivora. Bei der "biologischen" Hyperthermie kann das Gewebe durch eine bestimmte Frequenz von Infra-Rot-Strahlung bis zu einer Temperatur erhitzt werden, wo Krebszellen absterben und gesunde Zellen unbeschadet bleiben. Die Carnivora-Therapie ist eine Enzym-Behandlung aus der Pflanze "Dionaea Muscipula". Die Behandlung wird durch Infusion, Injektion oder oral gegen fast alle Arten von Tumoren verabreicht.

In dem neuesten Bericht des Deutschen Krebsforschungszentrums (DKFZ) sind folgende Angaben zu diesen Behandlungsansätzen veröffentlicht worden:

Nach traditioneller Methode:	**Nach alternativen Methoden:**
Von 100 Patienten	Von 100 Patienten
... überleben 90 die Operation	... überleben 100 die Behandlung
... leben 68 länger als 1 Jahr	... leben 77 länger als 1 Jahr
... leben 34 länger als 5 Jahre	... leben 22 länger als 5 Jahre

Bitte entscheiden Sie sich durch Ankreuzen für eine der dargebotenen Methoden:

Traditionell ☐   Alternativ ☐

Appendix E: Action Control Scale (ACS-90; Kuhl, 1994b)

Es folgt nun ein Fragebogen zu persönlichen Einstellungen und Verhaltensweisen. Bitte kreuzen Sie zu jeder Aussage immer diejenige der beiden Antwortmöglichkeiten (*a* oder *b*) an, die für Sie *am ehesten* zutrifft.

Denken Sie bitte daran, es gibt hierbei weder „richtige" noch „falsche" Antworten.

---

(1) Wenn ich etwas Wertvolles verloren habe und jede Suche vergeblich war, dann
a) kann ich mich schlecht auf etwas anderes konzentrieren.
b) denke ich nicht mehr lange darüber nach.

---

(2) Wenn ich weiß, dass etwas bald erledigt werden muss, dann
a) muss ich mir oft einen Ruck geben, um den Anfang zu kriegen.
b) fällt es mir leicht, es schnell hinter mich zu bringen.

---

(3) Wenn ich ein neues, interessantes Spiel gelernt habe, dann
a) habe ich bald auch wieder genug davon und tue etwas anderes.
b) bleibe ich lange in das Spiel vertieft.

---

(4) Wenn ich vier Wochen lang an einer Sache gearbeitet habe und dann doch alles misslungen ist, dann
a) dauert es lange, bis ich mich damit abfinde.
b) denke ich nicht mehr lange darüber nach.

---

(5) Wenn ich nichts Besonderes vorhabe und Langeweile habe, dann
a) kann ich mich manchmal nicht entscheiden, was ich tun soll.
b) habe ich meist rasch eine neue Beschäftigung.

---

(6) Wenn ich für etwas mir Wichtiges arbeite, dann
a) unterbreche ich gern zwischendurch, um etwas anderes zu tun.
b) gehe ich so in der Arbeit auf, dass ich lange Zeit dabei bleibe.

---

(7) Wenn ich bei einem Wettkampf öfter hintereinander verloren habe, dann
a) denke ich bald nicht mehr daran.
b) geht mir das noch eine ganze Weile durch den Kopf.

(8) Wenn ich ein schwieriges Problem angehen will, dann
a) kommt mir die Sache vorher wie ein Berg vor.
b) überlege ich, wie ich die Sache auf eine einigermaßen angenehme Weise hinter mich bringen kann.

(9) Wenn ich einen interessanten Film sehe, dann
a) bin ich meist so vertieft, dass ich gar nicht auf den Gedanken komme, zu unterbrechen.
b) habe ich zwischendurch trotzdem manchmal Lust, zu unterbrechen und etwas anderes zu machen.

(10) Wenn mir ein neues Gerät versehentlich auf den Boden gefallen und nicht mehr zu reparieren ist, dann
a) finde ich mich rasch mit der Sache ab.
b) komme ich nicht so schnell darüber hinweg.

(11) Wenn ich ein schwieriges Problem lösen muss, dann
a) lege ich meist sofort los.
b) gehen mir zuerst andere Dinge durch den Kopf, bevor ich mich richtig an die Aufgabe heranmache.

(12) Wenn ich mich lange Zeit mit einer interessanten Sache beschäftige, dann
a) denke ich manchmal darüber nach, ob diese Beschäftigung auch wirklich nützlich ist.
b) gehe ich meist so in der Sache auf, dass ich gar nicht daran denke, wie sinnvoll sie ist.

(13) Wenn ich jemanden, mit dem ich etwas Wichtiges besprechen muss, wiederholt nicht zu Hause antreffe, dann
a) geht mir das oft durch den Kopf, auch wenn ich mich schon mit etwas anderem beschäftige.
b) blende ich das aus, bis die nächste Gelegenheit kommt, ihn zu treffen.

(14) Wenn ich vor der Frage stehe, was ich in einigen freien Stunden tun soll, dann
a) überlege ich manchmal eine Weile, bis ich mich entscheiden kann.
b) entscheide ich mich meist ohne Schwierigkeit für eine der möglichen Beschäftigungen.

(15) Wenn ich einen interessanten Artikel in der Zeitung lese, dann
a) bin ich meist sehr in das Lesen vertieft und lese den Artikel zu Ende.
b) wechsle ich trotzdem oft zu einem anderen Artikel, bevor ich ihn ganz gelesen habe.

(16) Wenn ich nach einem Einkauf zu Hause merke, dass ich zu viel bezahlt habe, aber das Geld nicht mehr zurückbekomme,

a) fällt es mir schwer, mich auf irgend etwas anderes zu konzentrieren.

b) fällt es mir leicht, die Sache auszublenden.

(17) Wenn ich eigentlich zu Hause arbeiten müsste, dann

a) fällt es mir oft schwer, mich an die Arbeit zu machen.

b) fange ich meist ohne Weiteres an.

(18) Auf einer Urlaubsreise, die mir recht gut gefällt,

a) habe ich nach einiger Zeit Lust, etwas ganz anderes zu machen.

b) kommt mir bis zum Schluss nicht der Gedanke, etwas anderes zu machen.

(19) Wenn meine Arbeit als völlig unzureichend bezeichnet wird, dann

a) lasse ich mich davon nicht lange beirren.

b) bin ich zuerst wie gelähmt.

(20) Wenn ich sehr viele wichtige Dinge zu erledigen habe, dann

a) überlege ich oft, wo ich anfangen soll.

b) fällt es mir leicht, einen Plan zu machen und ihn auszuführen.

(21) Wenn ich mit einem Nachbarn über ein interessantes Thema rede, dann

a) entwickelt sich leicht ein ausgedehntes Gespräch.

b) habe ich bald wieder Lust, etwas anderes zu tun.

(22) Wenn ich mich verfahre (z. B. mit dem Auto, mit dem Bus usw.) und eine wichtige Verabredung verpasse, dann

a) kann ich mich zuerst schlecht aufraffen, irgendetwas anderes anzupacken.

b) lasse ich die Sache erst mal auf sich beruhen und wende mich ohne Schwierigkeiten anderen Dingen zu.

(23) Wenn ich zu zwei Dingen große Lust habe, die ich aber nicht beide machen kann, dann

a) beginne ich schnell mit einer Sache und denke gar nicht mehr an die andere.

b) fällt es mir nicht so leicht, von einer der beiden Sachen ganz Abstand zu nehmen.

(24) Wenn ich mit einer interessanten Arbeit beschäftigt bin, dann

a) suche ich mir zwischendurch gern eine andere Arbeit.

b) könnte ich unentwegt weitermachen.

(25) Wenn mir etwas ganz Wichtiges immer wieder nicht gelingen will, dann

a) verliere ich allmählich den Mut.

b) vergesse ich es zunächst einmal und beschäftige mich mit anderen Dingen.

(26) Wenn ich etwas Wichtiges, aber Unangenehmes zu erledigen habe, dann

a) lege ich meist sofort los.

b) kann es eine Weile dauern, bis ich mich dazu aufraffe.

(27) Wenn ich mich auf einer Party mit jemandem über ein interessantes Thema unterhalte, dann

a) kann ich mich für lange Zeit in das Thema vertiefen.

b) wechsle ich nach einiger Zeit gern zu einem anderen Thema.

(28) Wenn mich etwas traurig macht, dann

a) fällt es mir schwer, irgendetwas anderes zu tun.

b) fällt es mir leicht, mich durch andere Dinge abzulenken.

(29) Wenn ich vorhabe, eine umfassende Arbeit zu erledigen, dann

a) denke ich manchmal zu lange nach, womit ich anfangen soll.

b) habe ich keine Probleme loszulegen.

(30) Wenn ich bei einem Spiel viel besser abgeschnitten habe als die übrigen Spieler, dann

a) habe ich Lust, mit dem Spiel aufzuhören.

b) möchte ich am liebsten gleich weiterspielen.

(31) Wenn einmal sehr viele Dinge am selben Tag misslingen, dann

a) weiß ich manchmal nichts mit mir anzufangen.

b) bleibe ich fast genauso tatkräftig, als wäre nichts passiert.

(32) Wenn ich vor einer langweiligen Aufgabe stehe, dann

a) habe ich meist keine Probleme, mich an die Arbeit zu machen.

b) bin ich manchmal wie gelähmt.

(33) Wenn ich etwas Interessantes lese, dann

a) beschäftige ich mich zwischendurch zur Abwechslung auch mit anderen Dingen.

b) bleibe ich oft sehr lange dabei.

(34) **Wenn ich meinen ganzen Ehrgeiz darin gesetzt habe, eine bestimmte Arbeit gut zu verrichten und es geht schief, dann**

a) kann ich die Sache auf sich beruhen lassen und mich anderen Dingen zuwenden.

b) fällt es mir schwer, überhaupt noch etwas zu tun.

(35) **Wenn ich unbedingt einer lästigen Pflicht nachgehen muss, dann**

a) bringe ich die Sachen ohne Schwierigkeiten hinter mich.

b) fällt es mir schwer, damit anzufangen.

(36) **Wenn ich versuche, etwas Neues zu lernen, das mich sehr interessiert, dann**

a) vertiefe ich mich für lange Zeit in diese Sache.

b) unterbreche ich gern nach einiger Zeit, um mich anderen Dingen zuzuwenden.

Appendix F: The German Translation of Rosenberg's Self- Esteem Scale

(Ferring & Filipp, 1996)

Unten finden Sie verschiedene Aussagen, die man über die eigene Person treffen kann.

Beantworten Sie bitte die folgenden Aussagen anhand der vorgegebenen Antwortmöglichkeiten
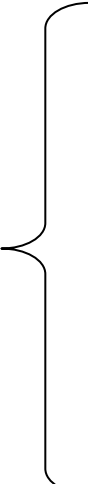
(von 0 bis 3).

Kreuzen Sie bitte diejenige Antwortmöglichkeit an, die *am ehesten* auf Sie zutrifft.

	Trifft gar nicht zu	*Trifft nicht zu*	*Trifft zu*	*Trifft voll und ganz zu*
1) Alles in allem bin ich mit mir selbst zufrieden.	( )	( )	( )	( )
2) Hin und wieder denke ich, dass ich gar nichts tauge. (r)	( )	( )	( )	( )
3) Ich besitze eine Reihe guter Eigenschaften.	( )	( )	( )	( )
4) Ich besitze die gleichen Fähigkeiten wie die meisten anderen Menschen auch.	( )	( )	( )	( )
5) Ich fürchte, es gibt nicht viel, worauf ich stolz sein kann. (r)	( )	( )	( )	( )
6) Ich fühle mich von Zeit zu Zeit richtig nutzlos. (r)	( )	( )	( )	( )
7) Ich halte mich für einen wertvollen Menschen, jedenfalls nicht weniger wertvoll als andere auch.	( )	( )	( )	( )
8) Ich wünschte, ich könnte vor mir selbst mehr Achtung haben. (r)	( )	( )	( )	( )
9) Alles in allem neige ich dazu, mich für einen Versager zu halten. (r)	( )	( )	( )	( )
10) Ich habe eine positive Einstellung zu mir selbst gefunden.	( )	( )	( )	( )

Appendix G: The Implicit Positive and Negative Affect Test (Quirin, Kazén, &

Kuhl, 2009)

Zunächst werden Ihnen einige Wörter aus einer Kunstsprache präsentiert, die Stimmungen ausdrücken sollen. Diese Aufgabe wird Ihnen im Laufe des Fragebogens öfter begegnen, lassen Sie sich bitte nicht davon irritieren. In allen Sprachen gibt es Wörter, die das, was sie bezeichnen, schon im Klang ausdrücken. Das nennt man „Lautmalerei" (z.B. das Wort „Rasseln" hört sich schon ein wenig wie ein Rasseln an). Bitte beurteilen Sie bei den folgenden Wörter, wie stark sie vom Klang her verschiedene Stimmungen ausdrücken.

Nutzen Sie für die Beantwortung die angegebene Skala von 1 bis 6 und kreuzen Sie diejenigen Antworten an, die nach **Ihrem Gefühl** *am ehesten* für Sie passt.

		Passt gar nicht					*Passt sehr gut*
SAFME	Gutgelaunt	①	②	③	④	⑤	⑥
	Hilflos	①	②	③	④	⑤	⑥
	Normal	①	②	③	④	⑤	⑥
	fröhlich	①	②	③	④	⑤	⑥
	Verkrampft	①	②	③	④	⑤	⑥
	Sachlich	①	②	③	④	⑤	⑥
	Aktiv	①	②	③	④	⑤	⑥
	Gehemmt	①	②	③	④	⑤	⑥

		①	②	③	④	⑤	⑥
VIKES	Gutgelaunt	①	②	③	④	⑤	⑥
	Hilflos	①	②	③	④	⑤	⑥
	Normal	①	②	③	④	⑤	⑥
	fröhlich	①	②	③	④	⑤	⑥
	Verkrampft	①	②	③	④	⑤	⑥
	Sachlich	①	②	③	④	⑤	⑥
	Aktiv	①	②	③	④	⑤	⑥
	Gehemmt	①	②	③	④	⑤	⑥
TUNBA	Gutgelaunt	①	②	③	④	⑤	⑥
	Hilflos	①	②	③	④	⑤	⑥
	Normal	①	②	③	④	⑤	⑥
	fröhlich	①	②	③	④	⑤	⑥
	Verkrampft	①	②	③	④	⑤	⑥
	Sachlich	①	②	③	④	⑤	⑥
	Aktiv	①	②	③	④	⑤	⑥
	Gehemmt	①	②	③	④	⑤	⑥
TALEP	Gutgelaunt	①	②	③	④	⑤	⑥
	Hilflos	①	②	③	④	⑤	⑥
	Normal	①	②	③	④	⑤	⑥
	fröhlich	①	②	③	④	⑤	⑥
	Verkrampft	①	②	③	④	⑤	⑥
	Sachlich	①	②	③	④	⑤	⑥
	Aktiv	①	②	③	④	⑤	⑥
	Gehemmt	①	②	③	④	⑤	⑥

SUKOV							
	Gutgelaunt	①	②	③	④	⑤	⑥
	Hilflos	①	②	③	④	⑤	⑥
	Normal	①	②	③	④	⑤	⑥
	fröhlich	①	②	③	④	⑤	⑥
	Verkrampft	①	②	③	④	⑤	⑥
	Sachlich	①	②	③	④	⑤	⑥
	Aktiv	①	②	③	④	⑤	⑥
	Gehemmt	①	②	③	④	⑤	⑥

Appendix H: Death Questionnaire

Im Folgenden werden Sie gebeten zwei Fragen zu beantworten.

Die Fragen beziehen sich darauf, welche Empfindungen und Gefühle beim Gedanke an eine bestimmte Situation in Ihnen aufkommen.

Bitte lesen Sie die Instruktionen sorgfältig durch und beantworten Sie jede Frage.

Nehmen Sie sich bitte für die Beantwortung der Fragen einen Moment Zeit.

Versetzen Sie sich in die geschilderte Situation und gehen Sie auf folgende Fragen ein:

- Was empfinden Sie?
- Woran denken Sie?
- Was fühlen Sie in dieser Situation?

Lassen Sie sich einen Augenblick Zeit dafür, sich gedanklich in jeweilige Situation hinein zu versetzen.

Bitte schreiben Sie erst dann diese Gefühle und Gedanken nieder und antworten Sie in etwa fünf bis zehn Sätzen.

Bitte beschreibe die Gefühle, die der Gedanke an Zahnschmerzen in Ihnen

aufkommen lässt.

Bitte beschreiben Sie, was Ihrer Meinung nach mit Ihnen geschehen wird, wenn sich bei Ihnen Zahnschmerzen ankündigen und wenn Sie Zahnschmerzen haben.

Bitte beschreiben Sie kurz die Gefühle, die der Gedanke an Ihren eigenen Tod in Ihnen aufkommen lässt.

Bitte beschreiben Sie, was Ihrer Meinung nach mit Ihnen geschehen wird, wenn Sie im Sterben liegen und wenn Sie körperlich tot sind.

Appendix I: Word Stem Completion Task

Unten finden Sie eine Reihe von unvollständigen Wörtern. Jedes Wortfragment sollen Sie durch Buchstaben ergänzen, so dass ein sinnvolles Wort entsteht. Bitte schreiben Sie das erste Wort auf, das Ihnen in den Sinn kommt. Nehmen Sie sich für die Aufgabe ein paar Minuten Zeit und *versuchen* Sie, alle Wörter zu ergänzen.

_ _ _ che

_ _ rt

_ _ _ _ _ _ _ _ ende

T _ _

_ _ nd

Le _ _

Ste _ _ _

Lager _ _ _ _

_ _ _ _ ig

Ba _ _

Da _ _

Gra _

Me _ _ _ _

Ab _ _ _

Sa _ _

Ru _ _

_ _ _ _ _ anzeige

R _ _

_ _ _ _ stein

Appendix J: Instructions and Items used in the PANTER Procedure

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Liebe Teilnehmerin, lieber Teilnehmer,

vielen Dank für die Teilnahme an dieser Studie!

Diese Studie dient der Entwicklung eines "Alltagstauglichkeitstest".

Wir werden Sie bitten, verschiedene Aufgaben zu bearbeiten. Mit diesen Aufgaben soll die

alltägliche Handlungsfähigkeit von Personen getestet werden.

Bei diesen Tests handelt es sich meist um alltägliche und teilweise banale Tätigkeiten.

Im Folgenden werden Ihnen nun Experteneinschätzungen präsentiert, also die Meinungen von

Experten, welche Aufgaben diese für geeignet halten, um die alltägliche Handlungsfähigkeit

zu messen.

Bitte achten Sie aufmerksam auf die Experteneinschätzungen, da sie auch für Sie im Alltag

nützlich werden könnten!

Bevor es losgeht möchten wir Sie bitten, die beiliegenden Kopfhörer aufzusetzen.

Vielen Dank!

Im Folgenden dürfen Sie selbst wählen, welche Aufgaben für eine Überprüfung alltäglicher

Handlungsfähigkeit geeignet wären.

Dazu werden Ihnen mehrere Aufgaben präsentiert, aus denen Sie einige Aufgaben auswählen

können.

Liebe Teilnehmerin, lieber Teilnehmer,

Ihnen wurden zu Beginn der Untersuchung verschiedene Aufgaben präsentiert, die der

Entwicklung eines "Alltagstauglichkeitstests" dienen sollen. Dabei wurden Ihnen die

Einschätzungen von Experten präsentiert, welche Aufgaben sie für geeignet halten, um das

Konstrukt "alltägliche Handlungsfähigkeit" zu messen. Weiter wurden Sie gebeten, selbst

eine Einschätzung zu liefern, welche Aufgaben Sie selbst für einen solchen Test geeignet

halten.

Im Folgenden werden Ihnen noch einmal die Aufgaben für den „Alltagstauglichkeitstest"

präsentiert. Dabei sollen Sie die erscheinenden Aufgaben danach kategorisieren, ob sie im

ersten Teil <u>von Experten</u> empfohlen wurden oder nicht.

Wurde die Aufgabe von Experten empfohlen, drücken Sie bitte „Ja".

Wurde die Aufgabe nicht von Experten empfohlen, drücken Sie bitte „Nein".

Bitte benutzen Sie beide Zeigefinger, um die Tasten zu betätigen.

Bitte entscheiden Sie spontan, vermeiden Sie jedoch Fehler.

Im Folgenden werden Ihnen noch einmal die Aufgaben für den "Alltagstauglichkeitstest"

präsentiert. Dabei sollen Sie die erscheinenden Aufgaben danach kategorisieren, ob Sie sie im

ersten Teil der Untersuchung <u>selbst ausgewählt</u> haben oder nicht.

Wenn Sie die Aufgabe selbst gewählt haben, drücken Sie bitte „Ja".

Haben Sie die Aufgabe nicht ausgewählt, drücken Sie „Nein".

Bitte benutzen Sie beide Zeigefinger, um die Tasten zu betätigen.

Bitte entscheiden Sie spontan, vermeiden Sie jedoch Fehler