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Chapter · January 2018

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How Do We Know If You Know Your Self?

Measures, Causes, and Consequences of Self-Access

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Baumann, N., Kazén, M., & Quirin, M. (2017). How do we know if you know yourself: Measures, causes, and consequences of self-access. In N. Baumann, M. Kazén, M. Quirin, & S. L. Koole (Eds.), *Why people do the things they do: Building on Julius Kuhl's contributions to the psychology of motivation and volition* (pp. 259-280). Göttingen/Seattle: Hogrefe.

Abstract

Although researchers agree that they have to distinguish self-concepts from the entity they refer to (i.e., the self), many still struggle with a clear definition and measure of the self. How well people know themselves (i.e., how much access they have to their implicit self) differs greatly between and within individuals. PSI theory (Kuhl, 2000, 2001) defines the self as part of a larger, parallel-distributed network system (extension memory) that integrates autobiographical information and implicit representations of own needs, goals, and preferences. In the present chapter, we give an overview over six different measures of self-access that are derived from or consistent with PSI theory. Three measures are based on the consistency of explicit ratings with different contents of the self: (a) implicit needs (*motive congruence*), (b) previous goal selections (*self-discrimination*), and (c) previous preference ratings (*preference stability*). Three latency-based measures tap into distinct processing characteristics of the self: (d) intuitive processing as indicated by shorter RTs during a self-classification task (*self-activation*), (e) integrative (thorough) processing as indicated by longer RTs in case of conflict-laden information (*autonoetic access*), and (f) evaluative processing as indicated by RTs correlation with decision difficulty (*preference sensitivity*). Our review elaborates on causes (e.g., negative affect), correlates (e.g., action vs. state orientation), and outcomes (e.g., well-being) of self-access. Overall, the findings indicate that self-access can be reliably and validly measured and constitutes a strong and vital resource in personality functioning.

KEYWORDS*: Implicit self, self-access, implicit/explicit motive congruence, self-infiltration, action orientation, Personality Systems Interactions (PSI) theory*

How Do We Know If You Know Your Self?

Non-Reactive Measures, Causes, and Consequences of Self-Access

"He who knows others is wise; he who knows himself is enlightened." (Lao Tzu)

"In a few seconds, we judge another person and think we know them. When, the person we've lived with the longest, we still don't know very well—ourselves." (Glassman, 2009)

From ancient philosophy to modern self-help books, the quest for self-knowledge is a pervasive topic, highly valued, and associated with positive outcomes such as enlightenment and psychological health. At the same time, lay theory as well as scientific evidence suggest that self-knowledge is hard to achieve. Of course, people can consciously reflect about themselves and develop a conceptual understanding of the self (Markus & Nurius, 1986; Swann, Chang-Schneider, & Larsen McClart, 2007). However, people's self-concept is based on conscious processes that are limited to a small number of semantic units (Strack & Deutsch, 2004) and not grounded in the full spectrum of actual experience (Epstein, 1994; Koole & DeHart, 2007). Therefore, the self-concept has to be distinguished from the self that it is referring to (Baumeister, 1998; James, 1890).

But what really is the self? Although virtually all human beings are endowed with an intuitive sense of self, psychologists have a hard time measuring the self. One of the difficult problems is that researchers cannot take people's own introspective reports of the self at face value. This is because people who are alienated from the self may not realize the true extent of their alienation and therefore erroneously report that they fully understand themselves. To tackle this problem, it is necessary to develop more objective, non-reactive measures of self-knowledge that go beyond subjective assessments of their self-knowledge. Although developing such measures is difficult, researchers have made good progress in this area over the last two decades. Our goal in this chapter is to review this work and what it reveals about

the broad significance of self-knowledge for health and well-being.

Research on non-reactive measures of self-knowledge has been mostly guided by Personality Systems Interactions (PSI) theory (Kuhl, 2000, 2001). In the next section, we therefore begin with a brief summary of the theory and its relevance to self-knowledge. After this, we review the literature on non-reactive measures of self-knowledge. We distinguish between two major kinds of such measures: Consistency-based measures that cover important contents of self-knowledge and measures based on response times that tap into distinct processing characteristics of the self. We end this chapter by summarizing our main conclusions and considering the broader implications of research on non-reactive measures of self-knowledge.

PSI Theory and the Self

PSI theory (Kuhl, 2000, 2001) is a broad theory that integrates the psychology of motivation and volition into a broader framework and explains central aspects of a fully functioning personality. When describing people as mature and fully functioning, we expect them to show two major qualities: to be able to enact their goals in the face of difficulty (i.e., action control) and to learn from negative experiences (i.e., self-growth). According to PSI theory, these central aspects of personality functioning require a dynamic interplay between cognitive and affective systems (for a comprehensive overview of PSI theory see Kazén & Quirin, chap. 2, this volume).

As depicted in Figure 1, two cognitive macro systems describe central executive functions that top-down modulate the activation of two low-level cognitive systems, respectively. The collaboration of these high- and low-level systems is modulated by affect and fosters action control and self-growth. On the one hand, dynamic changes in positive affect support a smooth transition of intentions (stored in *intention memory*) into action (*intuitive behavior control*) and foster action control (see also Goschke & Bolte, chap. 7, and

Ruigendijk, Jostmann, & Koole, chap. 9, this volume). On the other hand, dynamic changes in negative affect support the integration of negative experiences (activated in an *object recognition* system) into our experiential knowledge (*extension memory*) and foster self-growth. The self is part of this broader experiential knowledge system and will be in the focus of this chapter.

PSI theory defines the self as part of an extended, parallel-distributed network system (extension memory) that integrates autobiographical information and implicit representations of own needs, goals, preferences, and other self-relevant information. Because of the extensiveness of the networks, the self operates according to connectionist, parallel-processing principles (Rumelhart, McClelland, & The PDP Research Group, 1986) and is largely inaccessible to introspection (Greenwald & Banaji, 1995). Consistent with this definition, we use the term "self" as synonymous for the *implicit* self and in contrast to self-concepts, which are based on sequential processing and activation of schematic self-knowledge in working memory (Lieberman et al., 2004) and closely associated to private self-consciousness (Fenigstein, Scheier, & Buss, 1975) and self-reflection (Swann et al., 2007).

Notably, given that extension memory operates upon meaningful, self-relevant information, the contents of extension memory are likely to be at least partially consciously accessible. This may occur, for example, when contents are relevant for a pending decision or when individuals are deliberately reflecting about themselves. Nevertheless, the bulk of the contents of extension memory will remain implicit because only a small portion can be brought to conscious deliberation at a time. Instead, people may become aware of the summary or output of the information processed by extension memory as a gut feeling for a right decision (Baumann & Kuhl, 2002) or a self-determined course of action (Ryan & Deci, 2000; Sheldon, 2014; Sheldon, chap. 15, this volume). However, such phenomenological correlates of self-access are sometimes misleading (Kuhl & Kazén, 1994).

According to PSI theory (Kuhl, 2000, 2001), access to extension memory and the self becomes reduced by persistent negative affect (Baumann & Kuhl, 2002; Kazén, Baumann, & Kuhl, 2003). The underlying idea is that negative affect signals to the person that prior experiences and self-knowledge are insufficient to cope with the current situation. Extension memory and the self are therefore inhibited under conditions of negative affect, so that the person is able to take in new information that is potentially at odds with what the person learned before. For instance, the new information may shatter deeply held assumptions about the world (e.g., "I am not invulnerable") or undermine the person's self-esteem (e.g., "I am not as smart as I thought I was"). Once this new information is acquired, extension memory and the self may become activated again to integrate the new information into a larger autobiographical network (Linville, 1987; Rothermund & Meiniger, 2004; Showers & Kling, 1996). Once this integration occurs, it helps to down-regulate negative affect. Thus, there is a mutual inhibitory relationship between self-access and negative affect.

Based on the assumptions of attachment theory about the role of responsive and sensitive parenting for positive self-development (Bowlby, 1969), developmental research has shown that children's ability to represent own and others' mental states is promoted by caretakers' mirroring their mental and emotional states (Fonagy, Gergely, Jurist, & Target, 2002). Compatible with attachment theory, Kuhl (2000, 2001) has proposed that the development of affect regulation is acquired through internalizing caregivers' regulation of the infant's emotions by connecting ("conditioning") the infant's self (e.g., expressions of anxiety or frustration) with their calming down or encouragement. This connection provides a basis for personal self-growth (see also Hirschauer, Aufhammer, Bode, Chasiotis, & Künne, chap. 21, and Liesenfeld, chap. 22, this volume). Consistent with its early development, affect regulation and self-growth are associated with the *implicit* rather than conceptual self (cf. Schore, 2001).

Early developing and rather stable inter-individual differences in affect regulation are assessed by the personality disposition of action versus state orientation. Action-oriented people are able to disengage from failure and remain active under threatening or demanding conditions because they can self-regulate affect, whereas state-oriented people ruminate after failure and hesitate under demanding conditions because they cannot self-regulate affect (Kuhl & Beckmann, 1994b). Findings by Koole and Jostmann (2004) show that self-access is indeed the agent (mediator) of the better regulatory outcomes of action-oriented people (Koole & Jostmann, 2004, Exp. 3).

Based on PSI theory (Kuhl, 2000, 2001), we propose that access to the implicit self is a strong and vital resource in personality functioning. Self-access goes hand in hand with successful self-regulation and allows individuals to integrate conflicting experiences, feelings, or action tendencies. If we want to test our assumption and the evaluation of relevant findings, we need to be able to measure self-access. But how can we do this?

Measuring Self-Access

As we explained at the start of this chapter, it is not possible to measure implicit self-access by asking people about their feelings or experiences. It is therefore important to develop non-reactive measures of self-access.Within the framework of PSI theory, several non-reactive measures have been developed that can broadly be classified as consistency- and latency-based. Although it may be appealing to have several measures to choose from, one may ask why we would need so many measures of self-access?

According to PSI theory, the self is a broad and extended network system that integrates a multitude of self-relevant information: stable *needs* for affiliation, achievement, and power that are guiding forces throughout our lives, long- and short-term *goals* that are more or less personally meaningful (e.g., studying psychology, doing the dishes), and fleeting *preferences* for arbitrary items (e.g., Chinese symbols, soft drinks). Our consistency-based

measures of self-access tap into these different contents. One measure taps into people's access of stable needs (*motive congruence*), a second grasps whether people can discriminate self-selected from externally assigned goals (*self-discrimination*), whereas a third relies on repeated ratings for rather meaningless items (*preference stability*). Thus, they greatly differ with respect to the stability and personal meaning of the self-relevant information they tap into as well as the experimental control they offer. Furthermore, according to PSI theory, the self is based on parallel-holistic information processing that is not only *intuitive* (fast access to self-relevant information) but also *integrative* (slow and thorough processing in case of conflict) and *evaluative* (sensitive to affective information). Therefore, a fourth measure focuses on *intuitive* processing (*self-activation*): fast access to aspects of the self that are not problematic (e.g., describing oneself as outgoing). A fifth measure, taps more into *integrative* processing needed for problematic self-aspects (*autonoetic access*): a thorough and slower processing when self-relevant information entails a conflict (e.g., admitting to be unfaithful). Finally, a sixth measure taps into the *evaluative* nature of the self: sensitivity to personal, affective evaluations that lead to a positive correlation between decision latencies and decision difficulties (*preference sensitivity*).

The self is an extended network system and a rich experiential knowledge base. Every measure grasps different contents of the self (needs, goals, and preferences) and different processing characteristics (intuitive, integrative, and evaluative). With this wealth of measures, we gain a more thorough understanding of self-access. In addition to these theoretical differences, the measures vary in terms of practical issues and publicity. Some are rather time-consuming but widely used and well established in psychological research (e.g., motive congruence). Others are fast but have yet to be established (e.g., preference consistency). Our present overview is designed to inform researchers about the (dis)advantages of each method, to enable a choice of method based on theoretical rather than

practical considerations, and to motivate researchers to apply multiple methods in order to further our understanding of measures, causes, and consequences of self-access.

In the remainder of this chapter, we elaborate on three consistency-based measures of self-access and the contents they tap into as well as on three latency-based measures of self-access and the processing characteristics of the self they focus on. For each measure, we provide an overview over the available findings: What are the personality variables and situational conditions that foster or hinder self-access? What are the outcomes associated with good or poor self-access?

Consistency-Based Measures of Self-Access

Consistent with Kuhl's (2000, 2001) definition of the self as implicit representations of own needs, goals, and preferences, the three consistency-based measures grasps access to the self via consistency of explicit ratings with (1) implicit needs (motive congruence), (2) self-selected goals or mini-actions (self-discrimination), and (3) previous preference ratings (preference stability). Higher consistency indicates better self-access. The measures are listed in descending order with respect to stability (trait vs. state aspects) and ecological validity (high vs. low personal meaning) and in ascending order in terms of experimental control and practicability. For example, motive congruence taps into trait aspects with high personal meaning but offers little experimental control and is very time-consuming. Preference stability, in contrast, taps into state aspects with low personal meaning but offers high experimental control and is easy to apply. We elaborate on each measure in more detail.

Motive Congruence

The most widely investigated measure of self-access to date is based on the level of congruence between people's explicit (self-reported) motives and implicit (indirectly assessed) motives. Since the groundbreaking work by McClelland, Koestner, and Weinberger (1989), it has become well established that people's explicit motives may differ from their

implicit motives (Schultheiss & Brunstein, 2010). Explicit motives are measured with questionnaires or goal surveys, whereas implicit motives are measured with the Thematic Apperception Test (TAT), the Picture Story Exercise (PSE), or the Operant Motive Test (OMT). The three classical motives are affiliation (the desire to build, keep, or restore positive affectual relationships with other people), achievement (the desire to derive pleasure from mastering challenging tasks), and power (the desire to gain pleasure from having an impact on others). Recently, autonomy (freedom) is proposed as a fourth motive, that is, the need for self-integration and self-definition (see Alsleben, chap. 24, this volume). Implicit motives are developed in early, preverbal stages of development, are driven by activity-inherent incentives, and predictive of spontaneous and operant behavior. Explicit motives are developed later in childhood through explicit social learning, are driven by social-evaluative incentives, and predictive of respondent behavior.

Implicit and explicit motives may go hand in hand, so that they mutually reinforce each other. However, the strength of people's implicit and explicit motives is often not correlated, which means that there often exist gaps between both types of motivation. When people have a stronger explicit motive than their implicit motive, this suggests they are striving for goals without gaining pleasure from doing so. Conversely, when people have a stronger implicit motive than their corresponding explicit motive, this means they display a lack of striving for goals which would give rise to positive affect (Langens & McClelland, 1997; cf. Kazén & Kuhl, 2011).

Within the framework of PSI theory, implicit and explicit motives have been linked to extension memory and intention memory, respectively (Baumann, Kaschel, & Kuhl, 2005). In order to form valid representations of implicit needs in terms of self-congruent goals, intention memory needs to "communicate" with the extended networks of extension memory (see Figure 1). This communication is easily disturbed when low positive affect

(over)activates intention memory and/or negative affect inhibits extension memory, limiting access to implicit needs and self-knowledge. Motive congruence, in contrast, indicates good communication and self-access. Table 1 provides an overview of key findings on motive congruence.

Consistent with the broader theoretical framework of PSI theory, motive congruence is predicted by a high ability to self-regulate emotions (i.e., demand- and threat-related action orientation) – especially when demanding and threating life circumstances require self-regulation. Further self-reported traits that correlate with motive congruence can be summarized as either indicative of an activation of extension memory (e.g., self-determination, high body awareness) or a tendency to deactivate intention memory and conscious reflection about the self (e.g., low self-monitoring).

A large body of literature supports the idea that low motive congruence functions like a "hidden stressor" (Baumann, et al., 2005). Motive congruence, in contrast, is associated with life satisfaction, well-being, and health. Such nurturing effects of motive congruence have been obtained across the three major motive domains of affiliation, achievement, and power and apply across different cultures (see Table 1). Furthermore, they have been obtained for a broad range of subjective outcomes (e.g., psychosomatic symptoms, well-being, flow experience), manifold behavioral outcomes assessed via self-ratings (e.g., medication intake), external ratings (e.g., supervisor ratings of work performance), or nonreactive measures (e.g., self-discrimination), and long-term developmental outcomes (e.g., identity status). The findings support the pivotal role of self-access for personality functioning and health.

In addition, several studies investigated buffers against the adverse effects of low motive congruence that range from goal imagery and affect-focused goal fantasies to emotional disclosure and self-expression exercises (see Table 1). These interventions seem to foster access to extension memory and crosstalk between systems by focusing on affective

qualities of goals and making participants verbalize own wishes, needs, and feelings. Finally, there is evidence that motive congruence does not always unfold its beneficial effects in any given situation. Motives need to be aroused by specific incentives (Schüler, 2010) and translated into corresponding behavior (Schüler, Job, Fröhlich, & Brandstätter, 2008) without any general inhibition of activity (Langens, 2007) before they unfold their predictive power.

To summarize, motive incongruence is the most widely established measure of self-access. Motive congruence taps into stable traits and differentiates between domains. For example, people may lack self-access in the achievement domain, but not in the affiliation domain (e.g., a scientist who endorses too many projects offered at work but is well able to balance the relationships with family and friends at home). This is highly informative for counseling. A drawback of the measure is that the application and coding of PSE and OMT are highly time-consuming. As listed below, there are shorter measures available that are promising alternatives to motive congruence such as self-discrimination. At least for the achievement domain, there is first evidence of convergent validity between motive congruence and self-discrimination (Baumann, 2016).

The Self-DiscriminationTask

If people's self-access is reduced, their self-concept may be more prone to become "invaded" by social expectations, goals, and intentions of others. This process can be assessed by the self-discrimination task developed by Kuhl and Kazén (1994). These researchers experimentally varied the objective self-other status of goals during the simulation of a working day in an office. Participants choose some activities (e.g., "sharpening pencils," "sorting letters") for later enactment and are assigned to do others. Some activities remain unchosen. Later on, there is an unexpected memory test for the initial *source* of the goals. A tendency to falsely ascribe more originally assigned activities as self-selected than remaining activities is interpreted as *self-infiltration* – a conflict-laden type of internalization

(*introjection*; Perls, 1973). Note that individual differences in memory performance are controlled by comparing two different sources of error (i.e., false self-ascriptions of assigned vs. remaining activities).

The "Process-Analytic Neuroticism Test for Adults" (PANTER) is an elaborated computer version of the paper-and-pencil method that takes into account the subjective attractiveness of items. Attractive items have a greater intrinsic value than non-attractive ones and are easier to integrate into the self (*identification*; Kuhl & Kazén, 1994; Ryan & Deci, 2000; Sheldon, Arndt, & Houser-Marko, 2003). Self-infiltration is therefore restricted to *unattractive* items (Kazén, Baumann, & Kuhl, 2003) A further advantage of the PANTER procedure is its full experimental control over the objective self-other status and other goal attributes (see Kazén et al., 2003). It requires at least 32 items: 4 objective sources (selected by both, self-selected, externally assigned, remaining) x 2 levels of attractiveness (low vs. high) x 4 items as a minimum per cell. The category "both" was omitted in the early paper-and-pencil version. Items typically describe "mini-goals" or activities that are not especially meaningful in daily life. Thus, self-infiltration does not assess the degree of internalization (introjection vs. identification) of specific personal goals but the dispositional and/or current tendency towards self-infiltration. Lower self-infiltration indicates higher self-discrimination and better self-access.

Compared to motive congruence, self-discrimination relies on memory rather than correlation of traits. Furthermore, errors are defined objectively (by the objective self-other status of goals) rather than normatively (by comparison with sample means to determine high vs. low motive scores). Finally, self-discrimination is not about personally meaningful goals but rather small activities. Nevertheless, self-discrimination correlates with personality functioning in daily life

As stated previously, PSI theory (Kuhl, 2000, 2001, see Figure 1) suggests that

persistent negative affect inhibits whereas successful down-regulation fosters self-access. Consistent with this assumption, self-discrimination findings typically reveal a Personality x Situation interaction (see Table 2). Baumann and Kuhl (2003), for example, found that state-oriented participants had a significant decrease in self-discrimination after the experimental induction of a negative compared to a positive mood. Action-oriented participants, in contrast, maintained self-access and did not confuse unattractive external assignments as self-selected goals across mood conditions.

In many studies, self-discrimination correlated positively with threat-related and sometimes demand-related action orientation (i.e., ability to down-regulate negative and self-generate positive affect, respectively). Furthermore, self-discrimination correlated negatively with depression, anxiety, and personality styles associated with high sensitivity to negative affect (e.g., compulsive-, dependent-, and avoidant-like styles) and/or low sensitivity to positive affect (e.g., depressive-like style). In a similar vein, situational stressors that reduced self-discrimination were typically characterized by high negative affect (e.g., negative subjective mood, social pressure) but also included qualities of low positive affect (e.g., sadness, uncompleted intention). Such explicit stressors were especially apt to reveal the stress-contingent decrements in self-discrimination among state-oriented participants. In addition, implicit stressors – such as reminders of one's mortality – were apt to reveal a stress-contingent increment in self-discrimination among action-oriented participants (Baumann, Lüdecke, & Walther, 2016). This may indicate a compensatory activation of the self in order to cope with existential anxiety. On a neurophysiological level, self-discrimination correlated negatively with the stress-hormone cortisol (Quirin et al., 2009) but was significantly increased after the experimental stimulation of right- compared to left-hemispheric processing (Baumann, Kuhl, & Kazén, 2005).

Kossak (2015) applied the procedure to personally meaningful goals: physical

activities among athletes. Fuhrmann and Kuhl (1998) adapted the procedure to healthy dieting. They recruited dieting willing participants and created a personalized list of dietary activities (e.g., “eating more broccoli”, “eating less French fries”) some of which were self-selected and others assigned by nutritional experts. After two weeks of dieting, recollection of the objective source of the dietary goals was at chance level among state-oriented participants. Action-oriented participants, in contrast, had correct self-ascription rates that were significantly above chance level (see Table 2). Furthermore, they were more committed to and enacted more self-selected compared to assigned goals. This self-priority explained their higher volitional efficiency compared to state-oriented participants. The findings show that the self-discrimination procedure can be adapted to ecologically valid settings and offers further options for analyses that complement and extend the self-discrimination measure.

Stability in Preference Ratings

Both the motive incongruence measure and the self-infiltration measure are rather time-consuming and complex in their application. However, there is also a quicker, but perhaps somewhat less sophisticated measure of self-access that has been around for more than 20 years under the label *latent alienation* but has been less widely researched. Kuhl and Beckmann (1994a) defined latent alienation as poor access to implicit representations of one’s own preferences. A measure of latent alienation therefore requires a valid approximation of one’s "true" preferences. To solve this problem, they took into account that access to the self is not completely and permanently either on or off but varies as a function of conditions. According to PSI theory, negative affect and stress reduce self-access whereas relaxed conditions foster self-access. Therefore, they assessed participants’ preferences under relaxed conditions as an approximation of "true" preferences and inconsistency in preferences over time or after some experimental induction as an indicator of latent alienation. Consistent with PSI theory, Kuhl and Beckmann (1994a) found state-oriented participants who worked on a

meaningless task to have lower stability (i.e., lower self-access) in repeated preference judgments of rather simple items.

As listed in Table 3, there are further studies that used preference stability as an indicator of self-access. Kuhl and Kazén (2009), for example, found personality styles characterized by high sensitivity to negative affect and/or low sensitivity to positive affect to show lower preference stability. Baumann, Lüdecke, and Walther (2016) found a perfect crossover interaction between action orientation and experimentally induced mortality-salience. This (implicit) existential stressor decreased preference stability among state-oriented and increased stability among action-oriented participants. Findings are consistent with the assumption of PSI theory that the former are not able to access the implicit self under stressful conditions whereas the latter are not motivated to access the self under relaxed conditions (cf. Koole, Jostmann, & Baumann, 2012).

Koole et al. (in press) applied the measure in an ecologically more valid setting when rating the quality of soft drinks and art paintings. Consistent with the restriction of the self-discrimination measure to unattractive items, low-quality items were diagnostically more informative than high-quality items. In addition, they used expert ratings as a baseline or approximation of the "true" quality of soft drinks. Note that expert ratings were unknown to participants so that high congruence with expert ratings does not indicate conformity or self-infiltration. Again, they found that state-oriented participants show lower consistency (with experts or their own previous ratings) in conditions that activate intention memory rather than extension memory (i.e., conscious reasoning; induced self-control).

Giesinger and Brandstätter (2013) provide a comprehensive overview of research on preference consistency in economic theory. They conclude that individual differences in preference consistency research have mostly been neglected and list some notable exceptions (Lee, Amir, & Ariely, 2009; Nordgren & Dijksterhuis, 2009). According to PSI theory, the

research on trait as well as state factors influencing preference consistency lacks an important feature that has been introduced by Kuhl and Beckmann (1994a): The assessment of preference judgments under relaxed conditions against which repeated judgments after some kind of experimental manipulation are compared. This approach allows for a more fine-grained analysis of personality by situation interactions.

Sometimes people may be well aware of their preferences but still not able to translate them into action. Kuhl and Beckmann (1994a) used the term *manifest alienation* to indicate failures to act according to one's own needs, goals, and preferences (see Figure 1). In operational terms, there is a low consistency between preferences and behavior (rather than between repeated preference ratings). Manifest alienation is theoretically linked with deficits in self-motivation (i.e., demand-related state orientation) because of the vital role of positive affect in volitional action control (Kuhl & Kazén, 1999). Consistent with this assumption, Kuhl and Beckmann (1994a) found participants with demand-related state orientation, after induction of monotony, to keep watching boring lottery drawings from previous weeks instead of switching to a more interesting travel report. Action orientation, in contrast, was associated with preference enactment across conditions.

Externally controlling (compared to autonomy supportive) conditions had similar effects and reduced the correlation between free-choice persistence and ratings of task interest among participants with demand-related state orientation (Baumann & Kuhl, 2005). Again, demand-related action-orientation was associated with preference enactment. In our view, preference enactment does not only indicate efficient action control but also high self-access because the respective measures involve free choice and attractive options ("wishes") rather than difficulties and demands ("intentions" or "duties"). Consistent with this idea, preference enactment also correlated positively with threat-related action orientation (Kazén et al., 2003) and self-discrimination (Baumann, 1998).

Taken together, the findings indicate that preference stability and preference enactment may be alternative measures of self-access. Preference stability can be easily applied repeatedly and is well able to capture state variation in self-access.

Latency-based Measures of Self-access

Whereas the consistency-based measures of self-access grasp different contents of the self, the latency-based measures tap into different processing characteristics of the self that can be described as intuitive, integrative, and evaluative. Each measure highlights one of the processing characteristics.

Self-Activation

If people have good access to the self, they may be expected to be faster in determining the self-relevance of information. Departing from this logic, Koole and Jostmann (2004) used *shorter* reaction times during a self-classification task as an indicator of self-activation and efficiency with which individuals are able to access self-knowledge (Koole & Kuhl, 2003). Speed at self-evaluation has been related to *intuitive* self-knowledge (Koole, Dijksterhuis, & Van Knippenberg, 2001) and the possession of clear and certain self-knowledge (McGregor & Marigold, 2003). Because of the speed of the responses it is likely that the self-classification occurs not only at an explicit level but also relies on implicit self-knowledge. Accordingly, speed at self-evaluation provides a valid marker of self-access. The items are typically positive or only mildly negative (e.g., lazy) and there is hardly any conflict because people can freely choose to select items as self-relevant or not. Therefore, self-activation captures the intuitive rather than integrative nature of the self.

As listed in Table 4, under demanding conditions, self-activation is reduced for state- and increased for action-oriented participants. Furthermore, Koole and Jostmann (2004) found that demand-contingent increases in self-activation among action-oriented participants mediate their better intuitive affect-regulation in a face discrimination task (i.e., faster pop-out

of a happy face among a crowd of angry faces). The findings nicely support the assumption that action-oriented participants use the implicit self as an agent of intuitive affect regulation. Findings by Baumann, Kazén, and Kuhl (2010) further support the validity of the self-activation measure by showing significant correlations with *intrinsic* strategies for the enactment of implicit motives in the Operant Motive Test (OMT; Kuhl & Scheffer, 1999): intimacy and prosocial guidance. These intrinsic enactment strategies, in turn, are supported by action orientation (Baumann, Chatterjee, & Hank, 2016; Hofer & Busch, 2011).

Autonoetic Access

Kazén, et al. (2003) introduced a measure of self-access that taps more into the *integrative* nature of the self: detecting and resolving conflict – a time-consuming process. The measure is based on reaction times in the PANTER procedure. During the self-selection phase, participants are presented with homogenous lists of either attractive or unattractive items and requested in each case to select half of them. In this forced-choice situation, they have to make decisions that run counter to their preferences (i.e., selecting unattractive and rejecting attractive items). When asked whether they had previously self-selected an item or not, they have to access *autonoetic* information. The term *autonoetic* refers to the portion of the episodic memory system in which self-related information is stored (Tulving, 1985; Wheeler, Stuss, & Tulving, 1997), that is, information concerning episodic or autobiographical events (e.g., having selected an item or not) as well as personal values and preferences (e.g., the attractiveness value of an option).

Higher autonoetic access is indicated by *longer* latencies during the classification of counter-preferential decisions (e.g., correctly classifying an unattractive item as previously self-selected) compared to preferential decisions because it increases the likelihood of detecting and resolving the conflicting information stored in episodic memory. Thus, longer latencies indicate more thorough self-compatibility-checking and better self-access (Kazén et

al., 2003). Notice that the absolute latency level is not critical for the assessment of autonoetic access (i.e., self-compatibility) but the difference in reaction times of counter-preferential versus preferential decisions. In contrast to self-activation that uses faster RTs, autonoetic access uses slower RTs to indicate self-access. The crucial difference between the measures is that autonoetic access involves a conflict that is absent in self-activation. This conflict has to be detected and elaborated in order to be resolved. This takes time and likely taps into a distinct characteristic of the self: integrative rather than intuitive processing.

Although the measure of autonoetic access has been developed within the context of the self-discrimination paradigm, it is not restricted to the PANTER procedure. During any task in which people make sufficient counter-preferential decisions (e.g., accepting "lazy" and rejecting "athletic" as self-descriptive), the measure can be calculated by subtracting RTs of preferential from RTs of counter-preferential decisions (e.g., Baumann et al., 2010; Kazén & Baumann, 2005). Notice that autonoetic access does not measure the positivity of the self. For example, describing oneself with many moderately negative and few positive items may be confounded with low self-esteem. However, autonoetic access does not rely on the ratio of counter-preferential compared to preferential decisions but on the difference in latencies for these two types of decisions. Consistent with the idea that access to the self can be assessed independently from self-esteem, Kazén and Baumann (2005) found autonoetic access to correlate neither with Rosenberg's (1965) self-esteem scale nor with an implicit association test (IAT) of self-esteem (Greenwald & Farnham, 2000).

As listed in Table 4, autonoetic access was observed under the same Personality x Situation conditions as self-discrimination. Under negative affect conditions, state-oriented participants showed reduced autonoetic access whereas action-oriented participants maintained or even increased their autonoetic access and thoroughly checked goals or traits before adopting them as self-compatible (Baumann, 1998; Kazén et al., 2003). Under relaxed

conditions, in contrast, state-oriented participants had as much (or even better) autonoetic access as action-oriented participants indicating a thorough self-compatibility checking. In addition, autonoetic access correlated positively with self-report measures of self-regulation competencies and negatively with life stress and neuroticism (Kazén & Baumann, 2005).

Further evidence of convergent validity was a positive correlation of autonoetic access with the *phi* coefficient of self-concept integration by Showers and Kling (1996): Participants describe themselves by sorting adjectives into groups that refer to aspects of themselves or domains in their life. *Phi* measures the level of integration or compartmentalization of positive and negative adjectives within life domains. Thus, it focuses on the structure rather than the contents of the self. Autonoetic access was associated with more integration of positive and negative adjectives within life domains rather than sorting positive and negative adjectives into separate compartments of their life (Kazén & Baumann, 2005; see Kazén & Halbruegge, 2002, for a computerized version of the card sorting test). Consistent with the idea that this integrative capacity of the implicit self is not fully captured by associative network models, a self-esteem IAT did not correlate with the nomological network of autonoetic access: Threat-related action orientation, self-relaxation, self-motivation, and self-concept integration (Kazén & Baumann, 2005).

Finally, findings by Baumann et al. (2010) show that autonoetic access was correlated with *integrative* motive enactment strategies in the OMT: Self-regulated coping with rejection and power-related threats. According to PSI theory, these strategies also involve the self but are more driven by (coping with) negative rather than positive affect. Thus, self-activation (i.e., shorter latencies in overall self-evaluations) and autonoetic access (i.e., longer latencies in counter-preferential decisions) may be conceived of as complementary measures that focus on intuitive and integrative functions of the self, respectively.

To summarize, autonoetic access complements the self-discrimination measure. Its

assessment within the PANTER procedure has the advantage of full experimental control over the ratio of counter-preferential to preferential decisions at the costs of a longer test duration. First empirical evidence supports the assumption that it can also be validly assessed within short self-classification tasks (Baumann et al., 2010; Kazén & Baumann, 2005).

Preference Sensitivity

Our final measure focuses on the *evaluative* nature of the self and sensitivity to evaluative information. The measure was developed by Guevara (1994) and considers the difficulty of preference judgments in pairwise comparisons. In a baseline phase, the subjective rank of items is determined in multiple pairwise comparisons in which participants select their preferred item. In the test phase, pairs differ in the initial ranking somewhere between 8 ranks (very different = easy decision) and 2 ranks (very similar = difficult decision). Reaction times in pairwise comparisons should increase with increasing task difficulty (lower rank distance) and yield a steeper positive slope across difficulty levels if people have good access to their preferences. In contrast, indifference to item attractiveness (i.e., a flat slope of reaction times across difficulty levels) indicates poorer self-access and alienation from own preferences. Across three studies, Guevara found supportive evidence for the validity of a flat slope as an indicator of poor self-access (see Table 4). Although the approach awaits further empirical validation, it may be valuable for future research because it does not rely on explicit preference ratings but on rather spontaneous behavioral indicators of self-preferences.

Discussion and Outlook

The quest for self-knowledge has posed a great challenge for people across the millennia. The present overview suggests that it is indeed possible, scientifically, to determine the extent to which people know themselves. Based on Kuhl's PSI theory (2000, 2001), we provided a clear definition of the implicit self and elaborated on six different measures of self-access. The measures show convergent validity and reveal similar conditions and correlates of

self-access. *Motive congruence* measures the alignment of implicit and explicit motives, that is, enduring and meaningful strivings. *Self-discrimination* measures the ability to protect the self from an invasion with self-alien goals. *Preference stability* measures access to (dis)likes for small items (e.g., soft drinks). Together, these consistency-based measures assess people's access to important contents of the self: needs, goals, and preferences. *Self-activation* measures fast access to self-knowledge. *Autonoetic access* measures a long and thorough information processing in case of conflicting information (e.g., having rejected an attractive option). *Preference sensitivity* measures whether people's decision times correspond to the decision difficulty (e.g., evaluative similarity of options). Together, these latency-based measures cover important functions of the self: intuitive, integrative, and evaluative processing of self-relevant information.

Our measures of self-access vary with respect to (a) stability of the contents they tap into (stable motives vs. current preferences), (b) ecological validity (personally meaningful needs and goals vs. mini-actions and arbitrary preferences), and (c) experimental control (normative estimates of motive congruence vs. full experimental control over the self-other status of goals in the self-discrimination task). Furthermore, our measure of self-access cover (d) pre- versus post-decisional action phases (e.g., preference stability vs. preference enactment) as well as (e) intuitive, integrative, and evaluative processes. Although the six measures differ greatly in the time and effort for participants and researchers, this may not be the best criterion for the measure of choice. The measures differ tremendously in the short- versus long-term effects they predict and have different (dis)advantages. To derive at a more practical advice for the measure of choice, more research is needed that applies multiple measures of self-access, tests them concurrently, and further elaborates on their nomological network and (dis)advantages.

Consistent with PSI theory, negative affect and the capacity to regulate affect seem to

play a crucial role for the degree of self-access. More specifically, negative affect and stress cause people to lose self-access (e.g., Baumann et al., 2005, Study 3; Baumann & Kuhl, 2003, Study 2). Therefore, self-regulatory abilities such as action orientation are crucial for maintaining self-access under stress. Many findings show that action-oriented people even increase self-access under stress. This indicates a self-reliant coping strategy: active down-regulation of stress through the self (e.g., Koole & Jostmann, 2004, Study 3). State-oriented people, in contrast, are not able to down-regulate negative affect and lose self-access under stress. In a similar vein, traits characterized by high negative affect (e.g., neuroticism, anxiety) and low positive affect (e.g., depression) are associated with lower self-access. Finally, the stress hormone cortisol is associated with lower self-access.

Our findings show that self-access plays a crucial role for well-being and psychological functioning (e.g., work performance, life satisfaction, healthy eating behavior, intrinsic motivation, and flow experience). This is important because goal theories assume that people mainly derive satisfaction and well-being from making progress towards and reaching their goals (Carver & Scheier, 1998; Diener, 1984; Emmons, 1996). The present findings suggest that the story is more complicated because people do not always know what they want. Even clearly stated goals are not always emotionally supported and congruent with implicit motives (Brunstein et al., 1998; McClelland et al., 1989). This lack of self-congruence has potentially detrimental effects on life satisfaction and well-being. Therefore, it is highly important to measure self-access in order to find ways to support self-access.

Our findings give first hints on ways to stimulate and train self-access. For example, stimulating right-hemispheric processes (e.g., through squeezing a soft ball in the left hand), providing meaningful task instructions, visualizing an accepting person, and encouraging people to express their feelings increases self-access. An active self is a necessary precondition for the development of own self-regulation abilities. Parents, teachers, managers,

and therapists may support the self in children, students, employees and clients in multiple ways. For example, Hirschauer, Aufhammer, Bode, Chasiotis, and Künne (chap. 21, this volume) show how parental empathy supports the development of children's capacity to regulate scholastic demands through the self. Fathers play an important role in this process (Liesenfeld, chap. 22, this volume). Solzbacher and Schwer (chap. 20, this volume) call on teachers to improve their own self-access in order to develop a professional pedagogic stance that supports students sustainably. Diefendorff, Richard, Dinh, and LeNoble (chap. 18, this volume) elaborate on conditions that foster action-oriented processes and self-access in work-related contexts. Gröpel and Beckmann (chap. 19, this volume) applied simple techniques to increase self-access in sports. Finally, therapists can support self-access through personality-oriented training (Ritz, chap. 23, this volume) and working with the freedom motive (i.e., the need for self-integration) that Alsleben (chap. 24, this volume) introduces as a fourth basic motive besides affiliation, achievement, and power.

To conclude, there are multiple ways to support self-access and most require a good relationship quality. It seems that we need good relationships with others to gain a better knowledge of and access to our self. Consistent with the famous Beatles' song, I may not only "get by" but arrive at true self-knowledge "*with a little help from my friends*". The presented measures provide valid instruments of self-access to further study the causes and consequences of self-access in future studies.

References

Baumann, N. (1998). *Selbst- versus Fremdbestimmung: Zum Einfluss von Stimmung, Bewusstheit und Persönlichkeit* [Self-determination versus heteronomy: On the impact of mood, consciousness, and personality]. Unpublished Dissertation. University of Osnabrück, Germany.

Baumann, N. (2016). *Dealing with Hidden Stressors: On the Relationship between*

Achievement Motive Incongruence and Self-Infiltration. Manuscript submitted for publication.

Baumann, N., Chatterjee, M. B., & Hank, P. (2016). Guiding others for their own good: Action orientation is associated with prosocial enactment of the implicit power motive. *Motivation and Emotion, 40,* 56-68.

Baumann, N., Kaschel, R., & Kuhl, J. (2005). Striving for unwanted goals: Stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of Personality and Social Psychology, 89,* 781-799.

Baumann, N., Kazén, M., & Kuhl, J. (2010). Implicit motives: A look from Personality Systems Interaction theory. In O. C. Schultheiss & J. C. Brunstein (Eds.), *Implicit Motives* (pp. 375-403). New York, NY: Oxford University Press.

Baumann, N., & Kuhl, J. (2002). Intuition, affect, and personality: Unconscious coherence judgments and self-regulation of negative affect. *Journal of Personality & Social Psychology, 83,* 1213-1223.

Baumann, N., & Kuhl, J. (2003). Self-Infiltration: Confusing assigned tasks as self-selected in memory. *Personality and Social Psychology Bulletin, 29,* 487-497.

Baumann, N., & Kuhl, J. (2005). How to resist temptation: The effects of external control versus autonomy support on self-regulatory dynamics. *Journal of Personality, 73,* 443-470.

Baumann, N., Kuhl, J., & Kazén, M. (2005). Left-hemispheric activation and self-infiltration: Testing a neuropsychological model of internalization. *Motivation and Emotion, 29,* 135-163.

Baumann, N., Lüdecke, C., & Walther, E. (2016). *Being Oneself in the Face of Death: Self-Access under Mortality Salience.* Manuscript submitted for publication.

Baumann, N., & Scheffer, D. (2011). Seeking flow in the achievement domain: The flow motive behind flow experience. *Motivation and Emotion, 35,* 267-284.

Baumeister, R. F. (1998). The self. In D. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed., Vol. 1, pp. 680-740). New York: McGraw-Hill.

Beck, A.T. (1967). *Depression: Causes and treatment.* Philadelphia, PA: University of Philadelphia Press.

Beck, A.T., Epstein, N., Brown, G. & Steer, R.A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 6,* 893-897.

Bowlby, J. (1969). *Attachment and Loss: Vol. 1. Attachment.* New York: Basic Books.

Brunstein, J. C. (2001). Persönliche Ziele und Handlungs- versus Lageorientierung: Wer bindet sich an realistische und bedürfniskongruente Ziele? [Personal goals and action versus state orientation: Who builds a commitment to realistic and need-congruent goals?] *Zeitschrift für Differentielle und Diagnostische Psychologie, 22,* 1–12.

Brunstein, J. C., Schultheiss, O. C., & Grässmann, R. (1998). Personal goals and emotional well-being: The moderating role of motive dispositions. *Journal of Personality and Social Psychology, 75,* 494–508.

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior.* New York: Cambridge University Press.

Cialdini, R. B., Trost, M. R., & Newsom, J. T. (1995). Preference for consistency: The development of a valid measure and the discovery of surprising behavioral implications. *Journal of Personality and Social Psychology, 69,* 318-328.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95,* 542-575.

Emmons, R. A. (1996). Striving and feeling: Personal goals and subjective well-being. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking motivation and*

cognition to behavior (pp. 313-337). New York: Guilford.

Epstein, S. (1994). Integration of the cognitive and the dynamic unconscious. *American Psychologist, 49,* 709-724.

Erikson, E. H. (1968). Identity: Youth and crisis. New York: Norton.

Fenigstein, A., Scheier, M. F., & Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting & Clinical Psychology, 43*, 522-527.

Fonagy, P., Gergely, G., Jurist, E. & Target, M. (2002). Affect regulation, mentalization, and the development of the self. New York: Other Press.

Fuhrmann, A. & Kuhl, J. (1998). Maintaining a healthy diet: Effects of personality and self-reward versus self-punishment on commitment to and enactment of self-chosen and assigned goals. *Psychology and Health, 13,* 651-686.

Giesinger, L., & Brandstätter, V. (2013). The consistency of preferences as a measure of self-access. In L. Giesinger, *Self-access in goal selection* (pp. 133-174). Unpublished Dissertation, University of Zürich, Switzerland.

Glassman, C., F. (2009). *Brain drain: The breakthrough that will change your life.* Dayton, OH: RTS Publishing.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 35,* 603-618.

Greenwald, A. G., & Farnham, S. D. (2000). Using the Implicit Association Test to measure self-esteem and self-concept. *Journal of Personality & Social Psychology, 79*, 1022-1038.

Gröpel, P. (2008). Affect regulation and motive-incongruent goal orientations: Relationships to well-being. *Studia Psychologica, 50*, 137–146.

Guevara, M. (1994). *Alienation und Selbstkontrolle: Das Ignorieren eigener Gefühle* [Alienation and self-control: Ignoring one's feelings]. Frankfurt/Main: Peter Lang.

Hofer, J., & Busch, H. (2011). Interpersonal identity achievement accounts for the link between action control and self-informed realization of the implicit affiliation-intimacy motive. *Identity: An International Journal of Theory and Research, 11,* 231–246.

Hofer, J. & Busch, H. (2013). Living in accordance with one's implicit motives: Cross-cultural evidence for beneficial effects of motive-goal congruence and motive satisfaction. In A. Efklides & D. Moraitou (Eds.), *A positive psychology perspective on quality of life* (pp. 51-66). New York: Springer.

Hofer, J., Busch, H., Bond, M. H., Kärtner, J., Kiessling, F. & Law, R. (2010a). Is Self-Determined Functioning a Universal Prerequisite for Motive–Goal Congruence? Examining the Domain of Achievement in Three Cultures. *Journal of Personality, 44,* 610-620.

Hofer, J., Busch, H., Bond, M. H., Li, M., & Law, R. (2010b). Effects of motive-goal congruence on well-being in the power domain: Considering goals and values in a German and two Chinese samples. *Journal of Research in Personality, 44,* 610-620.

Hofer, J., Busch, H., Chasiotis, A., & Kiessling, F. (2006). Motive congruence and interpersonal identity status. *Journal of Personality, 74,* 511-541.

James, W. (1890). *Principles of psychology.* New York, NY: Dover.

Job V. & Brandstätter, V. (2009). Get a taste of your goals: Promoting motive-goal congruence through affect-focus goal fantasy. *Journal of Personality, 77,* 1527-1559.

Job, V., Oertig, D., Brandstätter, V., & Allemand, M. (2010). Discrepancies between implicit and explicit motives and unhealthy eating behavior. *Journal of Personality, 78,* 1209-1238.

Kazén, M., & Baumann, N. (2005). *Distinguishing associative from integrative implicit measures of self-access.* Proceedings of the "Third International Biennial SELF

Research Conference," Max-Planck Institut of Human Development, Berlin, July. (CD; ISBN 1 74108 073 8).

Kazén, M., Baumann, N., & Kuhl, J. (2003). Self-infiltration vs. self-compatibility checking in dealing with unattractive tasks and unpleasant items: the moderating influence of state vs. action-orientation. *Motivation & Emotion, 27*, 157-197.

Kazén, M., & Halbruegge, M. (2002). *A computerized version of the Linville Card Sorting Test.* University of Osnabrueck, Germany.

Kazén, M., & Kuhl, J. (2011). Directional discrepancy between implicit and explicit power motives is related to well-being among managers. *Motivation and Emotion, 35*, 317–327.

Kehr, H. M. (2004). Implicit/explicit motive discrepancies and volitional depletion among managers. *Personality and Social Psychology Bulletin, 30*, 315-327.

Koole, S. L., & DeHart, T. (2007). Self-affection without self-reflection: Origins, mechanisms, and consequences of implicit self-esteem. In C. Sedikides & S. Spencer (Eds.), *The self in social psychology* (pp. 36–86). New York: Psychology Press.

Koole, S. L., Dijksterhuis, A., & van Knippenberg, A. (2001). What's in a name: Implicit self-esteem and the automatic self. *Journal of Personality & Social Psychology, 80*, 669-685.

Koole, S. L., & Jostmann, N. B. (2004). Getting a grip on your feelings: Effects of action orientation and external demands on intuitive affect regulation. *Journal of Personality & Social Psychology, 87*, 974-990.

Koole, S. L., Jostmann, N. B., & Baumann, N. (2012). Do demanding conditions help or hurt self-regulation? *Social and Personality Psychology Compass, 6/4,* 328-346.

Koole, S. L., & Kuhl, J. (2003). In search of the real self: A functional perspective on optimal

self-esteem and authenticity. *Psychological Inquiry, 14*, 43–48.

Koole, S. L., Tops, M., Strübin, S., Bouw, J., Schneider, I. K., Jostmann, N., B. (in press). The ego fixation hypothesis: Involuntary persistence of self-control. In J. P. Forgas & E. Harmon-Jones (Eds.), *The control within: Motivation and its regulation*. New York, NY, US: Psychology Press.

Kossak, T.-N. (2015). *Einfluss von Stress auf die sportliche Leistung* [Influence of stress on sports performance]. Unpublished Dissertation. Technical University of Munich, Munich, Germany.

Kuhl, J. (1994). Action versus state orientation: Psychometric properties of the Action Control Scale (ACS-90). In J. Kuhl & J. Beckmann (Eds.), *Volition and personality: State versus action orientation* (pp. 47-59). Göttingen: Hogrefe & Huber.

Kuhl, J. (2000). A functional-design approach to motivation and self-regulation: The dynamics of personality systems and interactions. In M. Boekaerts & P. R. Pintrich (Eds.), *Handbook of self-regulation.* (pp. 111-169). San Diego, CA, US: Academic Press.

Kuhl, J. (2001). *Motivation und Persönlichkeit. Interaktionen psychischer Systeme* [Motivation and personality: Interactions of mental systems]. Göttingen: Hogrefe.

Kuhl, J. (2011). Adaptive and maladaptive pathways of self-development: Mental health and interactions among personality systems. *Psychologia Rozwojowa [Developmental Psychology], 16 (4)*, 9-31.

Kuhl, J., & Beckmann, J. (1994a). Alienation: ignoring one's preferences. In J. Kuhl & J. Beckmann (Eds.), *Volition and personality: State versus action orientation* (pp. 375-390). Göttingen: Hogrefe & Huber.

Kuhl, J., & Beckmann, J. (Eds.) (1994b). *Volition and personality: State versus action orientation*. Göttingen: Hogrefe & Huber.

Kuhl, J., & Fuhrmann, A. (1998). Decomposing self-regulation and self-control: The volitional components inventory. In J. Heckhausen & C. Dweck (Eds.), *Motivation and self-regulation across the life span* (pp. 15-49). Cambridge: Cambridge University Press.

Kuhl, J., & Kazén, M. (1994). Self-discrimination and memory: State orientation and false self-ascription of assigned activities. *Journal of Personality & Social Psychology, 66,* 1103-1115.

Kuhl, J., & Kazén, M. (1999). Volitional facilitation of difficult intentions: Joint activation of intention memory and positive affect removes stroop interference. *Journal of Experimental Psychology: General, 128 (3),* 382-399.

Kuhl, J., & Kazén, M. (2009). *Persönlichkeits-Stil-und-Störungs-Inventar (PSSI): Hand-anweisung 2. Auflage* [Personality styles and - disorders inventory (PSDI): Manual, 2nd Edition]. Göttingen, Germany: Hogrefe.

Kuhl, J., & Scheffer, D. (1999). *Der operante Multi-Motive-Test (OMT): Manual [The operant multi-motive-test (OMT): Manual]*. University of Osnabrück, Osnabrück, Germany.

Lang, J. W. B., Zettler, I., Ewen, C., & Hülsheger, U. R. (2012). Implicit Motives, Explicit Traits, and Task and Contextual Performance at Work. *Journal of Applied Psychology*. Advance online publication. doi:10.1037/a0029556

Langens, T. A. (2007). Congruence between implicit and explicit motives and emotional well-being: The moderating role of activity inhibition. *Motivation and Emotion, 31,* 49–59.

Langens, T., & McClelland, D. C. (1997). *Implicit motives, explicit motives, and emotional well-being*. Poster presented at the 105th Convention of the American Psychological Association, Chicago.

Lee, L., Amir, O., & Ariely, D. (2009). In search of homo economicus: Cognitive noise and the role of emotion in preference consistency. *Journal of Consumer Research, 36,* 173–187.

Lieberman, M. D., Jarcho, J. M., & Satpute, A. B. (2004). Evidence-Based and Intuition-Based Self-Knowledge: An fMRI Study. *Journal of Personality and Social Psychology, 87,* 421-435.

Linville, P. W. (1987). Self-complexity as a cognitive buffer against stress-related illness and depression. *Journal of Personality and Social Psychology, 52,* 663-676.

Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist, 41,* 954-969.

McClelland, D. C., Koestner, R., & Weinberger, J. (1989). How do self-attributed and implicit motives differ? *Psychological Review, 96,* 690-702.

McGregor, I., & Marigold, D. C. (2003). Defensive zeal and the uncertain self: What makes you so sure? *Journal of Personality and Social Psychology, 85,* 838–852.

Miller, L. C., Murphy, R., & Buss, A. H. (1981). Consciousness of body: Private and public. *Journal of Personality and Social Psychology, 41,* 397-406.

Nordgren, L. F. & Dijksterhuis, A. (2009). The devil is in the deliberation: Thinking too much reduces preference consistency. *Journal of Consumer Research, 36,* 39–46.

Perls, F. S. (1973). *The Gestalt approach and eyewitness to therapy*. Palo Alto, CA: Science and Behavior Books.

Quirin, M., Koole, S. L., Baumann, N., Kazén, M., & Kuhl, J. (2009). You can't always remember what you want: The role of cortisol in self-ascription of assigned goals. *Journal of Research in Personality, 43,* 1026–1032.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Rothermund, K., & Meiniger, C. (2004). Stress-buffering effects of selfcomplexity: Reduced

affective spillover or self-regulatory processes? *Self and Identity, 3,* 263–282.

Rumelhart, D. E., McClelland, J .L. & The PDP Research Group (1986). *Parallel distributed processing: Explorations in the microstructure of cognition* (Vol. 1). Cambridge, MA: MIT press.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68–78.

Schore, A. N. (2001). Effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal*, *22*, 7-66.

Schüler, J. (2010). Achievement incentives determine the effects of achievement-motive incongruence on flow experience. *Motivation and Emotion, 34*, 2-14.

Schüler, J., Job, V., Fröhlich, S. M., & Brandstätter, V. (2008). A high implicit affiliation motive does not always make you happy: A corresponding explicit motive and corresponding behavior are further needed. *Motivation and Emotion, 32,* 231-242.

Schüler, J., Job, V., Fröhlich, S. M., & Brandstätter, V. (2009). Dealing with a 'hidden stressor': Emotional disclosure as a coping strategy to overcome the negative effects of motive incongruence on health. *Stress and Health, 25*, 221-233.

Schultheiss, O. C., & Brunstein, J. C. (1999). Goal imagery: Bridging the gap between implicit motives and explicit goals. *Journal of Personality, 67,* 1-38.

Schultheiss, O. C., & Brunstein, J. C. (Eds.) (2010). *Implicit motives*. New York: Oxford University Press.

Sheldon, K. M. (2014). Becoming oneself: The central role of self-concordant goal selection. *Personality and Social Psychology Review, 18,* 349-365.

Sheldon, K. M., Arndt, J., & Houser-Marko, L. (2003). In search of the organismic valuing process: The human tendency to move towards beneficial goal choices. *Journal of Personality*, *71*, 835-869.

Sheldon, K. M., & Deci, E. L. (1996). *The Self-Determination Scale.* Unpublished manuscript. University of Rochester, NY.

Showers, C. J., & Kling, K. C. (1996). Organization of self-knowledge: Implications for recovery from sad mood. *Journal of Personality and Social Psychology, 70,* 578-590.

Snyder, M., & Gangestad, S. (1986). On the nature of self-monitoring: Matters of assessment, matters of validity. *Journal of Personality and Social Psychology, 51,* 125-139.

Strack, F., & Deutsch, R. (2004). Reflective and Impulsive Determinants of Social Behavior. *Personality & Social Psychology Review, 8,* 220-247.

Swann Jr, W. B., Chang-Schneider, C., & Larsen McClarty, K. (2007). Do people's self-views matter? Self-concept and self-esteem in everyday life. *American Psychologist, 62*(2), 84-94.

Thrash, T. M., & Elliot, A. J. (2002). Implicit and self-attributed achievement motives: Concordance and predictive validity. *Journal of Personality, 70,* 729-755.

Thrash, T. M., Elliot, A. J., & Schultheiss, O. C. (2007). Methodological and dispositional predictors of congruence between implicit and explicit need for achievement. *Personality and Social Psychology Bulletin, 33,* 961-974.

Tulving, E. (1985). How many memory systems are there? *American Psychologist, 40,* 495-501.

Wagner, L., Baumann, N., & Hank, P. (2016).Enjoying influence on others: Congruently high implicit and explicit power motives are related to teachers' well-being. *Motivation and Emotion, 40,* 69-81.

Wheeler, M. A., Stuss, D. T. & Tulving, E. (1997). Toward a theory of episodic memory: The frontal lobes and autonoetic consciousness. *Psychological Bulletin, 121,* 331-354.

Table 1. *Selected Findings for Motive Congruence*

Predictors of Motive Congruence	**Reference**
- threat-related action orientation (Kuhl, 1994)	Brunstein (2001)
- threat-/demand-related action orientation under threatening/demanding conditions	Baumann, Kaschel, & Kuhl (2005)
- self-determination (Sheldon & Deci, 1996)	Hofer et al. (2010a); Thrash & Elliot (2002)
- awareness of private bodily states (Miller, Murphy, & Buss, 1981)	Thrash, Elliot, & Schultheiss (2007)
- low (conscious) self-monitoring (Snyder & Gangestad, 1986)	Thrash et al. (2007)
- preference for consistency (Cialdini, Trost, & Newsom, 1995)	Thrash et al. (2007)
Outcomes of Motive Congruence	
- well-being and life satisfaction	Brunstein, Schultheiss, & Grässmann, (1998)
- …across domains: - Affiliation (*n*Aff)	Schüler, Job, Fröhlich, & Brandstätter (2009)
- Achievement (*n*Ach)	Baumann, Kaschel, & Kuhl (2005); Thrash & Elliot (2002); Thrash et al. (2007)
- Power (*n*Pow)	Gröpel (2008); Kazén & Kuhl (2011); Wagner, Baumann, & Hank (2016)
- …across cultural contexts	Hofer & Busch (2013); Hofer et al. (2010a, b)
- low psychosomatic symptoms (*n*Aff, *n*Ach)	Baumann et al. (2005); Schüler et al. (2009)
- low medication intake (*n*Aff)	Schüler et al. (2009)
- healthy eating behavior	Job, Oertig, Brandstätter, & Allemand (2010)
- flow experience (*n*Ach)	Schüler (2010)
- high work performance (*n*Ach)	Lang, Zettler, Ewen, & Hülsheger (2012)
- low volitional depletion	Kehr (2004)
- self-discrimination (*n*Ach)	Baumann (2016)
- higher identity achievement and lower identity foreclosure (cf. Erikson, 1968) (*n*Aff)	Hofer, Busch, Chasiotis, & Kiessling (2006)
Buffers Against Adverse Effects of Motive Incongruence	
- goal imagery	Schultheiss & Brunstein (1999)
- affect-focused goal fantasies	Job & Brandstätter (2009)
- emotional disclosure	Schüler et al. (2009)
- self-expression exercise	Baumann (2016)
Prerequisites for Beneficial Effects of Motive Congruence	
- low activity inhibition	Langens (2007)
- motive-corresponding behavior	Schüler, Job, Fröhlich, & Brandstätter (2008)
- presence of motive-specific incentives	Schüler (2010)

Note. *n*Aff = Need for Affiliation; *n*Ach = Need for Achievement; *n*Pow = Need for Power

Table 2. *Overview of Findings for Self-Discrimination*

Exp.	Findings for Self-Discrimination	Reference
1	AOT > SOT	Kuhl & Kazén (1994)
2	completed intention: AOT = SOT (and at high levels) uncompleted intention: AOT > SOT	
1	low subjective sadness: SOT = AOT (and at high levels) high subjective sadness: AOT > SOT	Baumann & Kuhl (2003)
2	happy mood induction: AOT = SOT (and at high levels) sad mood induction: AOT > SOT	
3	correlations with personality styles (Kuhl & Kazén, 2009) associated with high sensitivity to negative affect: Loyal/Dependent r = -.38*; Self-critical/Avoidant r = -.43**; Conscientious/Compulsive r = -.34*; Spontaneous/Borderline r = -.35*; Passive/Depressive r = -.56***	Baumann (1998)
1	low task meaningfulness: AOT > SOT	Kazén, Baumann, & Kuhl (2003)
2	no social pressure: AOT = SOT (and at high levels) social pressure: AOT > SOT	
3	neutral subjective mood: AOT = SOT (and at high levels) negative subjective mood: AOT > SOT	
2	corr. with Beck's (1967) Depression Inventory (BDI): r = -.26* corr. with Beck's et al. (1988) Anxiety Inventory (BAI): r = -.23*ns* low subjective sadness: BDI r = .01*ns*; BAI r = .01*ns* high subjective sadness: BDI r = -.45*; BAI r = -.43*	Baumann (1998)
1, 2	right-hemispheric > left-hemispheric stimulation (through ball-squeezing in contralateral hand)	Baumann, Kuhl, & Kazén (2005)
2	corr. with relative right-hemispheric dominance: r = .29* (leftward shifts in a line bisection task)	
1	corr. with baseline cortisol: r = -.37* corr. with cortisol after stress induction: r = -.58***	Quirin, Koole, Baumann, Kazén, & Kuhl (2009)
2	corr. with *n*Flow (Implicit Need for Flow): r = .32*** (Operant Motive Test; Kuhl & Scheffer, 1999)	Baumann & Scheffer (2011)
2	SOT: mortality salience = dental pain induction AOT: mortality salience > dental pain induction	Baumann, Lüdecke, & Walther (2016)
1	high > low achievement motive congruence (MC_{Ach})	Baumann (2016)
2	induced need frustration: high > low MC_{Ach} induced need satisfaction: high = low MC_{Ach} (and at high levels)	
3	neutral condition: high > low MC_{Ach} self-expression condition: high = low MC_{Ach} (and at high levels)	
	Items: physical activities; Sample: sports students	Kossak (2015)
1	low physical strain: AOD = SOD high physical strain: AOD > SOD	
	DV: Correct self-ascriptions of dietary goals after 2-3 weeks	Fuhrmann & Kuhl (1998)
1	focus on ease of diet: AOT = SOT = 50% (i.e., chance level) focus on difficulty of diet: AOT > 50%; SOT = 50%.	
2	AOT > 50%; SOT = 50%	

Note. AOT/AOD vs. SOT/SOD = Threat-/Demand-related Action vs. State Orientation

Table 3. *Overview of Findings for Preference Stability*

Exp.	Findings for Preference Stability	Reference
1-3	*Items: wall-paper patterns* AOT > SOT	Guevara (1994)
2	*Items: simple movements (e.g., shaking one's head)* - low task meaningfulness: AOT > SOT - high task meaningfulness: AOT = SOT (and at high levels)	Kuhl & Beckmann (1994a)
1	Preference stability correlated … - negatively with styles high in negative affective (Loyal/Dependent, Self-critical/Avoidant, Spontaneous/Borderline, Passive/Depressive, Unselfish/Self-neglectful) and low in positive affect (Independent/Schizoid, Willful/Paranoid, Critical/Negativistic) - positively with a style high in positive affect (Charming/Histrionic)	Kuhl & Kazén (2009)
3, 4	*Items: trait adjectives (Exp. 3, 4) and Chinese symbols (Exp. 4):* AOT: mortality salience > dental pain induction between ratings SOT: mortality salience < dental pain induction between ratings	Baumann, Lüdecke, & Walther (2016)
1	*DV: Consensus with expert ratings of low-quality soft-drinks:* - spontaneous evaluation: AOT = SOT - conscious reasoning: AOT > SOT	Koole et al. (in press)
2	*DV: Stability in repeated judgments of low-quality paintings:* - low self-control induced between t1 and t2 ratings: AOT = SOT; - high self-control induced between t1 and t2 ratings: AOT > SOT	
Exp.	**Findings for Preference Enactment**	**Reference**
1	*DV: Switch to a preferred TV program* - low task meaningfulness: AOD > SOD - high task meaningfulness: AOD = SOD (and at high levels)	Kuhl & Beckmann (1994a)
1 2	*DV: Consistency of behavioral decisions with initial preference* AOT > SOT no social pressure: AOT < SOT social pressure: AOT = SOT	Kazén, Baumann, & Kuhl (2003)
2	*DV: Consistency of behavioral decisions with initial self-selections* high self-discrimination > low self-discrimination	Baumann (1998)
1	*DV: Correlation between free-choice persistence and task interest* AOD: external control = autonomy support (and at high levels) SOD: external control < autonomy support	Baumann & Kuhl (2005)

Note. AOT/AOD vs. SOT/SOD = Threat-/Demand-related Action vs. State Orientation

Table 4. *Overview of Findings for Latency-based Measures of Self-access*

Exp.	**Findings for Self-Activation** (as indicated by *short* latencies during a self-classification task)	**Reference**
3	AOT: visualizing a demanding > accepting person SOT: visualizing a demanding ≤ accepting person	Koole & Jostmann (2004)
1	correlation with *intrinsic* enactment strategies across motives in the Operant Motive Test (Kuhl & Scheffer, 1999): r = .50** (affiliation: r = .48**; achievement: r = .12*ns*; power: r = .41**)	Baumann, Kazén & Kuhl (2010)
Exp.	**Findings for Autonoetic Access** (as indicated by *longer* latencies in counter-preferential decisions)	**Reference**
1	low subjective sadness: AOT < SOT high subjective sadness: AOT > SOT	Baumann (1998)
3	happy mood induction: AOT = SOT sad mood induction: AOT ≥ SOT	
1	low task meaningfulness: AOT > SOT	Kazén, Baumann, & Kuhl (2003)
2	no social pressure: AOT = SOT social pressure: AOT > SOT	
3	neutral subjective mood: AOT = SOT negative subjective mood: AOT > SOT	
1	correlation with AOT: r = .40** self-concept integration (Phi; Showers & Kling, 1996): r = .40** self-motivation (VCI): r = .41** self-relaxation (VCI): r = .36* life stress (VCI): r = -.48*** neuroticism: r = -.57*** explicit self-esteem (Rosenberg, 1965): r = .21 *ns* A self-esteem IAT (Implicit Association Test; Greenwald & Farnham, 2000) did not correlate with any of the variables listed above.	Kazén & Baumann (2005)
1	correlation with *integrated* enactment strategies across motives in the Operant Motive Test (Kuhl & Scheffer, 1999): r = .39* (affiliation: r = .45**; achievement: r =-.01*ns*; power: r = .32*)	Baumann, Kazén & Kuhl (2010)
Exp.	**Findings for Preference Sensitivity**	**Reference**
	DV: Positive slope (i.e., increase) in latencies with increasing similarity (according to baseline ratings) in to-be-rated item pairs	Guevara (1994)
1-3	intuitive processing induction: AOT = SOT analytical processing induction: AOT > SOT	

Note. AOT (vs. SOT) = Threat-related Action (vs. State) Orientation; VCI = Volitional Components Inventory (Kuhl & Fuhrmann, 1998)

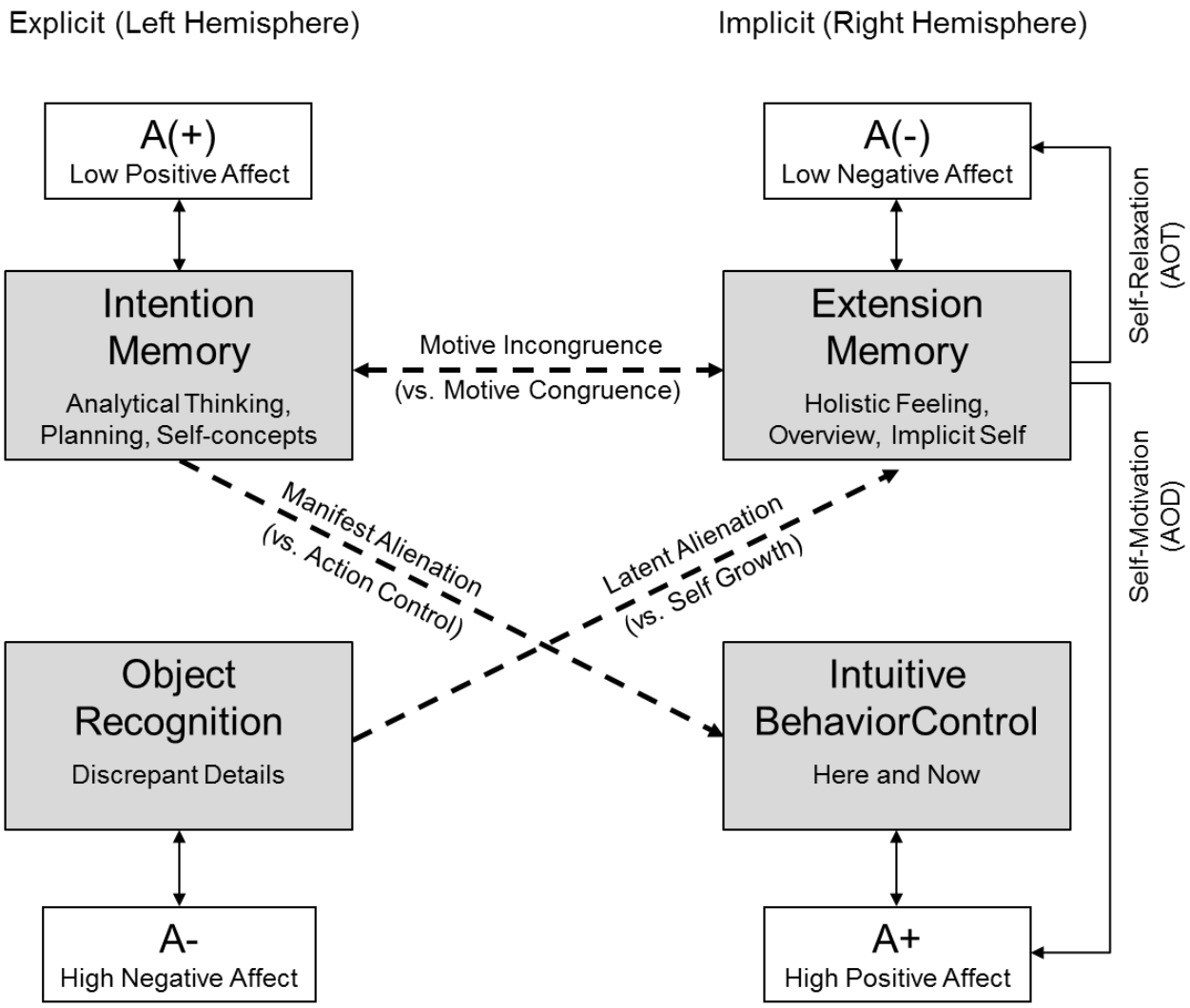

Figure 1. Cognitive systems of Personality Systems Interaction (PSI) theory and their modulation by affect (adapted from Kuhl, 2011). Note: Dashed arrows indicate antagonisms between cooperating systems. Affective changes from low to high positive affect (facilitated by demand-related action orientation, AOD) reduce manifest alienation and foster action control. Affective changes from high to low negative affect (facilitated by threat-related action orientation, AOT) reduce latent alienation and foster self-growth. Crosstalk between intention and extension memory fosters motive congruence. Self-motivation (AOD) helps to deactivate an overly strong intention memory under demanding conditions. Self-relaxation (AOT) helps to (re)activate extension memory under threatening conditions.