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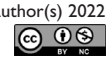

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Not self-aware? Psychological antecedents and consequences of alienating from one's actual motives, emotions, and goals

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Abstract

Philosophers and scientists have been puzzling over the potential antecedents and consequences of self-awareness or its relative absence since time immemorial. One major reason is the difficulty of identifying individuals' actual needs, emotions, or goals and thus making statements about their level of self-awareness. Drawing on a "duality of mind" approach, we review our research that quantified discrepancies between first-person perspective and third-person perspective assessments of motives ("needs"), emotions, and goals as indicators of relative self-awareness. Also, we expand on their proximal causes related to personality–situation interactions and their emotional and motivational consequences. We discuss similarities among the three branches of research on motives, emotions, and goals and, lastly, provide an outlook for future research.

Keywords

dual-process models, implicit affect measurement, implicit–explicit discrepancies, implicit motives measurement, self-awareness, self-infiltration

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Who am I? Do I follow my heart, my rational reasoning, or even other peoples' expectations? Individuals are often not fully aware of their motives, emotions, and goals—an issue that has been plaguing humans throughout their history, scientifically and privately, and that has obtained different names such as (high vs. low) self-awareness, self-insight, self-concordance, consciousness, self-reflection, introspection, authenticity, or self-access. Even the mantra "know thyself" inscribed at the entrance of the oracle of Delphi already alludes to the important role of self-awareness in individuals' lives.

However, how is it possible to adequately identify an individual's level of self-awareness, defined as being conscious about one's psychological functioning (see Klimoski & Hu, 2011, for a review)? This identification is important to be able to properly analyze psychological antecedents and consequences of self-awareness. Here, we use a dual-processing approach (e.g., Evans, 2006, 2008) postulating two types of reflective–propositional ("explicit") versus automatic–associative ("implicit") processing that require different types of assessment, that is, subjective ("self-reported") versus objective ("indirect") methods, respectively. Accordingly, the discrepancies between implicit and explicit assessments of the same construct (e.g., affiliation motive, positive affect) can be taken as an inverse measure of self-awareness.

Focusing on the research of the co-authors, the present article presents how such implicit–explicit discrepancies within motives (needs), emotions, and goals can be measured indirectly (i.e., without asking individuals about them). We review research of such implicit–explicit discrepancies within motives (needs), emotions, and goals (as indicators of low self-awareness) with relevant psychological antecedents and consequences. This approach is promising as previous research suggests that low self-awareness may be related to diminished human flourishing, for example, with respect to motivation, productivity, well-being, and life satisfaction (Cloninger, 2006).

We begin by introducing selected ideas from the history of philosophy that defined the theoretical origins of the three research branches that empirically investigate discrepancies within motive, emotions, and goals. Thereafter, we expand on low self-awareness and the discrepancy between implicit and explicit motives, emotions, and goals, and how these discrepancies can be measured. We report on corresponding psychological antecedents (e.g., stress) and negative psychological outcome states. We finish with some critical remarks on this research and an outlook for future research.

History of duality of mind and self-awareness in philosophy and psychology

The notion of *self-awareness*, that is, being conscious about one's psychological functioning including motives, emotions, and goals and how they affect one's behavior (see Klimoski & Hu, 2011, for a review) is inextricably linked to the idea of the duality of mind. *Duality of mind* refers to the idea that humans can process information at two levels of consciousness: at a more automatic and nonconscious level, versus at a reflected and conscious level (Shea & Frith, 2016). Duality of mind originally dates back to Plato (ca. 375 B.C.E./1993, pp. 144–152, 354–361), who thought of the soul as a mosaic of *reason*, *spirit*, and *appetite*. He posited that the function of reason is to control the other two parts and bring about a harmony among them (Frankish & Evans, 2009). This idea

of Plato's inspired other philosophers such as Descartes, who sparked the idea of mind–body dualism, and Leibniz, who believed that humankind is capable of true reasoning in addition to animalistic reasoning. Furthermore, shades of the duality of mind can been seen in Schopenhauer's "Will to Life," which he thought of as a strong blind man to the mind who carries on his shoulders a lame man who can see (Schopenhauer, 1818–1819/1966, p. 209). Likewise, Jean-Paul Sartre inherited the idea of dualism and made a distinction between prereflective and reflective self-awareness. According to Sartre, *pre-reflective self-awareness* is implicit, immediate, and irrational and belongs to the realm of the unconscious mind. In contrast, its counterpart, *reflective self-awareness*, is explicit, mediated, and a rational component of the mind (Cohen, 1992; Dennett & Weiner, 1991; Frankish, 2004, 2009; Rae, 2010). Previous works have developed propositions that place emphasis on the dual-attitude model and categorize beliefs and opinions with respect to the nature of each process (Cohen, 1992; Dennett & Weiner, 1991; Frankish, 2004, 2009; Rae, 2010; see Frankish, 2010 for a review).

Duality of mind and self-awareness also play crucial roles in psychological theories and research. For example, the above-mentioned philosophical schools of thought can be found in Freud's definition of primary and secondary processes. The primary processes are characterized by the associative unconscious mind, which—in Freud's thinking—is primarily based on (sexual) pleasure principles (Freud, 1905/1963, pp. 88–89). In contrast, the secondary process imposes control over the former under the command of the ego and conforms to reality principles (Freud, 1954). This notion was further developed and molded in different realms of psychology such as learning, reasoning, social cognition, decision-making, and motivation. Some examples are Arthur Reber's artificial grammar experiment, Evans' conception of heuristic-analytic theory, Petty and Cacioppo's elaboration likelihood model, Chaiken's heuristic-systematic model, Wilson, Lindsey, and Schooler's dual-attitude model, Kahneman and Tversky's system 1 and system 2, Reyna's fuzzy trace theory, and Fazio and colleagues' motivation and opportunity as determinants (MODE; see Frankish, 2010, for a review). Practically, all accounts of dual-processes view mind as a compound of two independent processes. According to many theories of duality of mind, the more primitive and evolutionarily older system, called system 1, is fast, automatic, implicit, and inaccurate. On the contrary, system 2 is slow, deliberate, explicit, and accurate. In addition, some of these accounts propose that these two systems operate in parallel and compete with each other (Sloman, 1996); as opposed to others, which view these systems as interactive (Epstein, 1994).

However, there have been some criticisms posed against dual-process models. As mentioned before, it has been unanimously surmised that one of the differences between the two systems is in their evolutionary timelines, with system 1 being evolutionarily older than system 2. Nevertheless, the sources of system 1 processing in the brain are sometimes embedded in the regions that are not evolutionarily old (Evans, 2006, 2008). Moreover, it has been widely acknowledged that system 2 is a rational-thinking style as opposed to system 1—determined as an irrational and biased-thinking style. Nonetheless, it seems that such a classification does not hold up anymore as several studies have shown that system 2 is sometimes biased, and, interestingly, system 1 can indeed lead to right answers (Evans & Stanovich, 2013). Likewise, to our very best knowledge, few theories, like the reflective–impulsive model (Strack & Deutsch, 2004), shed light on the

consequences of conflicts between these two implicit and explicit systems and almost none of them directly expound other ensuing effects of conflict on well-being, authenticity, autonomy, and so forth. However, there are other accounts that stand out in that sense and pay attention to the long-term repercussions of such a conflict, and that extend dual-process models to include additional processes or a differentiation within implicit processes or explicit processes.

For example, another model resulting from a synthesis of the dual-system approach is the compensatory model of work motivation and volition (3C model; Kehr, 2004b). Based on the dual-motive approach (Brunstein et al., 1998; McClelland, 1985; McClelland et al., 1989; Spangler, 1992), the compensatory model distinguished between implicit and explicit motives in deciphering motivation and well-being. Whereas implicit motives refer to unconscious needs that have been viewed as associative networks aroused by situational cues and leading to implicit behavioral tendencies, explicit motives are the reasons by which people explain their actions (McClelland, 1985; McClelland et al., 1989). In case of congruence between implicit and explicit motives, the compensatory model predicts intrinsic motivation (Ryan & Deci, 2000a), while incongruence is expected to have detrimental effects on motivation and well-being (Schüler et al., 2009). In the latter case, the model further suggests that volitional self-regulation is required to compensate (hence the name of the model) for a lack of or insufficient motivation caused by behavioral conflicts following discrepant motives. However, volitional self-regulation has several shortfalls, such as the idea that rigid self-control is strenuous and depends on volitional resources that might be depleted if excessively consumed (Baumeister, 2000).

Yet, personality systems interactions (PSI) theory (Kuhl, 2000, 2001; Kuhl et al., 2020) proposes that positive and negative affects modulate the interactions among low-level and high-level macrosystems. Although PSI theory put forth four macrosystems that interact differentially in individuals to determine behavior and experience, it still belongs to the family of dual-process models, as the macrosystems hinge on either intuitive or abstract processes. However, there is a major difference between this theory and others, which is that PSI considers low and high levels for each abstract and intuitive process. Lower order intuitive processes (action system) are responsible for implementing intended behavior; and the higher order intuitive process (extension memory, or the "integrative self"; Kuhl et al., 2015) is considered necessary for mindful, self-congruent goal selection (Quirin et al., 2019). On the other hand, the lower order abstract process (object recognition system) focuses on single details and detects discrepancies in expectancies, whereas the higher order abstract process (intention memory) is more of an analytical thinking process and keeps representations of prospective actions in mind until the arrival of an appropriate situation (Quirin et al., 2019). PSI theory posits that the activation of the extension memory is a sufficient and necessary condition for experiencing authenticity, which, in turn, leads to unity in thoughts, integration, well-being, and a fully functioning person (Kuhl et al., 2015).

In closing, diverse theories in philosophy and psychology exist that postulate and explain the duality of the human mind that share—despite conceptual differences—commonalities in the sense that all of them consider mind to be of both automatic and reflective processes. While some of them have not explicitly focused on discrepancies between

the two types of processing or eventual consequences, others explicitly did so, such as PSI theory and the compensatory model. Next, we will elaborate on empirical psychological research on the adverse consequences of impaired self-awareness empirically related to the discrepancies between direct and indirect measures of motives, affects, or goals. Since empirical evidence suggests that people are consciously aware of their implicit evaluations (Hahn & Gawronski, 2014), we do not equate implicitness with unconsciousness in the following.

Awareness of implicit motives

A motive is a tendency to proceed towards a specific group of stimuli, such as achievement, affiliation, or power, or to avoid a specific group of threats, such as failure, rejection, or oppression (Thrash et al., 2012). Over the past 70 years, motivational researchers in the McClelland–Atkinson tradition (Atkinson, 1957; McClelland et al., 1989) differentiated between explicit and implicit motives according to the taxonomy of *big three* motives: power (the need to dominate and influence), achievement (the need to improve one's skills and abilities and be better than others), and affiliation (the need to establish warm and mutually rewarding relationships with other people).

Whereas explicit motives are reflective preferences and can be measured by self-report questionnaires, implicit motives are automatic representations of motivational dispositions that lead to affective satisfaction and could be measured by picture-based tests. According to Schultheiss's (2001, 2008) information processing model, the implicit motivation system responds to nonverbal, pictorial stimuli and not to verbal stimuli. Accordingly, the instruments designed to assess implicit motives, the so-called picture story exercise (PSE; Schultheiss & Pang, 2007) and its precursor, the thematic apperception test (TAT; Murray, 1943), provide pictorial stimuli as situational cues to arouse a respondent's implicit motives. Respondents are instructed to generate imaginative stories, which are then content analyzed (Winter, 1994) for motive strength (Lang et al., 2012). In addition to the PSE, there are other measures such as the operant motive test (OMT), and the multimotive grid (MMG), which establish in the same concept as PSE but have been modified and extended in several aspects (see Schüler et al., 2015, for a review).

According to research (e.g., Köllner & Schultheiss, 2014), there seems to be no significant association between implicit and explicit motives, indicating that implicit and explicit motives represent two distinct domains of behavioral regulation in line with McClelland's point of view (McClelland, 1980; McClelland et al., 1989; Weinberger & McClelland, 1990). Consequently, behavior is supposed to be regulated by two independent systems, leading to either a state of harmony or consistency or a state of conflict or discrepancy between explicit and implicit motives (Brunstein, 2010; Kehr, 2004b; Schultheiss, 2008).

Past research has shown that a discrepancy between implicit and explicit motives may have deleterious consequences. Among those are unhealthy eating behaviors (Job et al., 2010), job burnout (Rawolle et al., 2016), increases in psychosomatic syndromes, and decreases in well-being (Baumann, Kaschel, & Kuhl, 2005). Kehr (2004a) found in a longitudinal field study amongst managers that volition depletion to compensate for

implicit and explicit motive discrepancies resulted in an impaired subjective well-being. On the other hand, consistency between these implicit and explicit motives is associated with benefits such as achievement of identity (committing to an identity when actively having searched for it; Hofer & Busch, 2017), the flow experience (an optimal state in which one is completely immersed in an activity, while enjoying it; Rheinberg, 2020), and higher levels of well-being (Thrash et al., 2012).

However, these two systems can be in harmony due to one's awareness of implicit motive. Individuals can learn about their implicit motives by applying metamotivational strategies (see Kehr & von Rosenstiel, 2006) to reduce implicit–explicit motive discrepancies. Moreover, self-awareness, which may be attained by instructing people to focus on their internal states or representations (e.g., affect or goals), reduces the implicit–explicit motives discrepancy (Schultheiss, 2021, p. 313). For instance, Strick and Papies (2017) have documented the benefits of mindfulness in alleviating implicit–explicit affiliation motives. Yet, the implicit and explicit motives for power did not yield the same results in their study.

In a similar vein, Job and Brandstätter (2009) found in three experiments that participants' implicit motives matched their explicit motives significantly better when they envisaged the subsequent affects to the goal pursuit versus when they imagined the goal pursuit alone. Awareness can increase by different techniques that encourage focusing on internal states, decreasing the discrepancy and subsequent repercussions of self-unawareness. However, awareness of internal states is not restricted to implicit motives and has more general implications.

Awareness of implicit emotions

Emotions provide evaluative information about situations, and thus play an important role in judgment and decision-making. According to appraisal theories (e.g., Arnold, 1960; Ellsworth, 2013; Frijda, 1986; Lazarus, 1991; Ortony et al., 1988; Roseman, 2013; Scherer, 2009), emotions are adaptative processes that reflect appraisals of features of the environment that are important for the survival of the organism (Moors, 2013), as one of their purposes is revealing whether our goals may be thwarted or attained (Montag & Panksepp, 2017).

Also, emotions are derived from the combination of core affect (e.g., valence and arousal) and linguistic processes that transfer affect to take the shape of a particular emotional state (e.g., anger, surprise; Barrett, 2006). Thus, affect is a broader term and is not as specific as emotion. Specifically, a view of affect as information describes affect as embodied information about value (i.e., goodness and badness) and importance (i.e., high vs. low arousal; Clore et al., 2001). The valence dimension of affect provides evaluative information about the stimuli, which plays a role in decision-making, where positive affect often promotes, and negative affect inhibits accessible responses. Thus, due to the complexity of emotions, investigating affect as the core of the emotional experience represents a fruitful approach in emotional science; therefore, both constructs have been extensively explored.

In addition, efforts have been directed to assess these constructs in an automatic (i.e., implicit) way, mainly because people do not always report their affects accurately (Quirin

& Bode, 2014). These inaccurate reports of affect indicate several biasing factors such as repression (Derakshan et al., 2007), limitations in introspection (Lane et al., 1996), or self-deception (Paulhus & Vazire, 2007). For example, one way that empirical psychology has tried to assess emotions objectively or indirectly is by investigating their physiological correlates. However, according to Cacioppo et al. (1993), the relationship between emotions and physiological reactions is ambiguous and highly context-dependent (Bradley & Lang, 2007; see also Mauss et al., 2005). According to Evers et al. (2014), theories of affect and its different components can shed light on this lack of coherence. Specifically, he argues that it can be due to weaknesses of response consistency across the multiple affect components, which might depend on the degree to which the responses take place prereflectively (i.e., automatically) or involve reflective cognitive processes. Thus, automatic (i.e., implicit) assessment of affect and emotions could clarify the connection between health and different emotional experiences.

Implicit affects are conceptualized as the automatically activated cognitive representations of affective experiences (Leventhal & Scherer, 1987; Quirin, Kazén, & Kuhl, 2009; Quirin et al., 2021). This automatic activation of representations is a function of the implicit system proposed in dual-process models, and of the higher level intuitive mode proposed in PSI theory. By contrast, explicit affect can function as the reflective (deliberate, conceptual) processing system (Strack & Deutsch, 2004). Because automatically activated representations of affective experiences can be processed consciously, implicit affect is not necessarily unconscious. However, there could be occasions wherein a person is not and cannot be aware of their affect (Fazio & Olson, 2003). In an empirical sense, this unawareness of affects could be detected by the discrepancy between indirect affect measures (e.g., electrodermal activity) and direct affect measures (e.g., self-report).

One such indirect measure based on an efficient procedure is the implicit positive and negative affect test (IPANAT; Quirin, Kazén, & Kuhl, 2009). The test aims to assess the automatic activation of cognitive representations of affect and draws on the principle of affect infusion (Forgas, 1995). The affect infusion principle posits that affects influence judgments of objects that are irrelevant to the affective experience at hand. In this measure, participants are confronted with an artificial (nonsense) word and are asked to rate on a Likert scale how much each artificial word sounds like a mood adjective (e.g., "happy" or "helpless").

The test rationale is that judgments of ambiguous objects (such as artificial words) require a constructive cognitive process that capitalizes on the amount of currently accessible information (Forgas, 1995). The less predefined meaning the stimulus has for an individual, the smaller the amount of available information directly related to the stimulus, leaving more space for affective states to automatically influence its judgments (Bower, 1981). Accordingly, when judging an artificial word, a specific ongoing affective state should differentially trigger conceptually related mood adjectives. Thus, individuals should rate artificial words higher on activated than on nonactivated semantic representations, thereby automatically revealing their affective state, which is relatively independent of what they explicitly report.

Using a principal component analysis, Quirin, Kazén, and Kuhl (2009) showed positive versus negative adjective scores of the original IPANAT version load on two

orthogonal components, which can be interpreted as positive versus negative affect. The good psychometric properties of the IPANAT have been replicated in more than 10 different languages across different continents (e.g., Hernandez, Rovira, et al., 2020; Quirin et al., 2016; Shimoda et al., 2014). Thus, the IPANAT appears to be a suitable candidate for capturing automatic emotional processes that might underlie any influence of emotional primes (supraliminal or subliminal) on judgment and behavior.

Even if this is a new field, the use of the IPANAT has already uncovered some implications of dissociations between implicit and explicit affect in psychological health. Congruency between implicit and explicit affect may play an important role on the effectiveness of psychological interventions. Suslow et al. (2019) found that, as expected, after 7 weeks of therapy, depressive patients displayed an increase in explicit and implicit positive affect, however, a discrepancy on the effects of the treatment was detected on negative affect, since a reduction was detected only for explicit trait negative affect. The authors argued that in the state of acute depression, the interplay between the automatic and reflective systems could be increased for negative affectivity. According to Remmers et al. (2018), the reduction of incongruencies between implicit and explicit emotional responses is useful in treating major depression. Thus, initial evidence suggests that a reduction of discrepancies between implicit and explicit affect can lead to psychological health.

As with motives, self-awareness promotes the congruency between implicit and explicit emotions. As research has shown, mindfulness increases the likelihood of processing different aspects of emotions (Hill & Updegraff, 2012), which may decrease the dissociation between implicit and explicit affect. Moreover, self-awareness attainable with mindfulness training is positively associated with emotional awareness. Emotional awareness is defined as the conscious (cognitive) processing of emotional aspects (e.g., physiology), which by definition designates the congruency between implicit and explicit affects. Therefore, emotional self-awareness reduces the mentioned discrepancy and improves psychophysiological health and subjective well-being (see Lane & Smith, 2021; Smith et al., 2018). However, the relationship between self-awareness and health goes beyond motives and affect to include subconsciously neglecting one's preferences and self-selected goals.

Awareness of implicit goals

According to Elliot and Fryer (2008, p. 244), goals can be defined as cognitive representations of future experiences, characteristics, or events that an individual either avoids or approaches. Besides the functional role of goals to regulate behavior through positive- and negative-feedback loops, goals are an important connector between the individual and their social world (Schultheiss, 2021). They allow individuals to regulate their behavior such that it fits in with their social environment, making them reliable members of their peer group (Jaynes, 1990; Mischel & Ayduk, 2004; Vygotsky, 1986). But this also implies that goals do not primarily reflect a representation of an individual's personal preferences (Emmons, 2004; Kehr, 2004b). Living in a social environment entails an inherent conflict between an individual's own preferences and those of others. In finding a healthy balance between personal choice and external control, people run the risk

of overly indulging in either neglecting or pleasing others—both supposedly harmful for one's personal and social life. However, the latter case is of special importance because a strong orientation towards the needs of others while neglecting one's own preferences may result in alienated goal pursuit (Kuhl et al., 2020), which is characterized by a sense of internal or external pressure to act that, in turn, has been shown to compromise motivation and well-being (Ryan & Deci, 2000a, 2017).

According to self-determination theory (SDT; La Guardia, 2009; Ryan & Deci, 2000a, 2000b, 2017), a leading theory in human motivation, the degree to which a goal is heteronomous (or externally controlled) or autonomous (or internally controlled) depends on the level of internalization that can be arranged on a relative continuum along which external goals and values can become stepwise internalized and, in the end, may become fully integrated within the self. The newly internalized goals can then make close and broad connections with already integrated self-representations, thus contributing to the growth of an integrated self-structure (Kuhl et al., 2015).

A specific level of internalization, that is, *introjection*, is of particular interest because it may address the question of self-awareness. Introjection refers to a level of internalization on which the individual experiences a goal as an obligation, as an external expectation rather than a self-selection, and as being of relatively low valence to one's self-structure (cf. ought self; Higgins, 1987, 1996; or Freud's superego). This level needs to be distinguished from a more autonomous level, that is, *identification*, where a goal is experienced as being self-selected, of positive valence, and thus worth being pursued (cf. ideal self; Higgins, 1987, 1996; or Freud's ego-ideal).

However, individuals often do not consciously recognize that a goal is introjected. This nonconscious form of introjection has been coined *self-infiltration*, as an individual's self is unconsciously infiltrated by an imposed goal that is discrepant with underlying, implicit preferences. That is, a self-infiltrated goal might appear favorable and consistent on an explicit level while it may in fact be aversive and discrepant with implicit preferences the individual is currently not aware of (Kuhl & Kazén, 1994). In addition to awareness of motives and emotions, self-infiltration can therefore be seen as another example for an explicit–implicit conflict due to the discrepancy between what an individual "wants" (i.e., explicit choice to conform and take on an imposed goal) and what an individual "needs" (i.e., relative unawareness of the discrepancy between an imposed goal and implicit preferences). Interestingly, a number of studies have demonstrated that negative affect or individual impairments in its regulation (i.e., state orientation or rumination) intensify an individual's proneness to self-infiltration (Baumann & Kuhl, 2003; Kazén et al., 2003; Kuhl & Kazén, 1994; Quirin, Koole, et al., 2009).

The nonconscious status of self-infiltrated goals thwarts their investigation via direct self-report questionnaires and warrants a nonreactive, objective assessment like implicit motives (see Baumann et al., 2018, for a recent overview). In Kuhl and Kazén's (1994) self-discrimination task, self-infiltration is assessed by the degree to which imposed activities are misremembered as self-chosen in the context of a working day of an office worker simulated at the computer. Specifically, in their experiments, participants chose relatively unpleasant activities (e.g., "sharpening pencils" or "sorting letters") for later enactment while other activities were assigned by a supervisor. Some activities remained neither chosen nor assigned. In a later phase of the experiments, participants performed

an unexpected memory test for the original source of the activities. A tendency to falsely ascribe more originally assigned than remaining activities as self-chosen was used as a measure of self-infiltration. Individual differences in memory performance were controlled by comparing these two different sources of error (i.e., false self-ascription of assigned vs. remaining activities). Hence, this self–other goal discrimination procedure measures the degree to which individuals can differentiate between self-chosen and imposed goals.

In comparison with awareness of motives and emotions, Kuhl and Kazén's (1994) way to operationalize and assess self-infiltration via the self-discrimination task can be seen as a purely objective measure of awareness of goals (Baumann et al., 2018). That is, while discrepancies in motives and emotions rely on the correlation of normatively defined differences between explicit and implicit measurement scores, self-infiltration relies on memory and objectively defined errors in recalling the objective self–other status of goals. Furthermore, the self-discrimination task is not about personally meaningful goals or emotions experienced simultaneously, as is the case for awareness of motives and emotions. Rather, it measures the dispositional and/or current tendency towards self-infiltration as an indicator of impaired awareness and increased proneness to alienation from goals in general. Despite its reduced ecological validity, self-infiltration has been shown to correlate with personality functioning in daily life.

Supported by a huge body of research, self-infiltration directly and as a nonconscious form of introjection has been shown to have detrimental effects on psychological functioning and well-being. For example, self-infiltration has been directly associated with rumination (Baumann & Kuhl, 2003), reduced ability to experience flow (Baumann & Scheffer, 2011), physiological stress response (Quirin, Koole, et al., 2009), and depression and anxiety (Baumann et al., 2018). As a nonconscious from of introjection, self-infiltration has been associated with heightened susceptibility to persuasion (Kazén et al., 2003; Koestner & Losier, 2002), reduced vitality, life satisfaction, and subjective well-being (Ryan & Deci, 2000a, 2017; Sheldon & Kasser, 1995; Sheldon et al., 2004) as well as increased depressive symptoms in response to major life transitions such as entering college (Koestner et al., 2010). Consequently, self-infiltration can be considered an insidious form of introjection as its unavailability to the individual obscures their understanding of why they may suffer from a lack of motivation or well-being, and thus renders functional goal disengagement unlikely.

Kazén et al. (2003) proposed that self-infiltration underlies a mechanism called *self-compatibility checking*. According to these authors, the extent to which a goal can be internalized and how deeply it can be integrated into the self depends on a successful evaluation of a goal with important aspects of the integrated self (i.e., values, needs, and personal preferences). Any factor impairing or blocking accessibility to the integrated self-system and its self-representations (e.g., intrusive thoughts) is expected to reduce the quality of this self-compatibility checking process, leaving individuals helpless in resisting external influences (e.g., imposed goals) and making self-congruent decisions in the formation of personal goals. Consequently, a poor self-compatibility checking is supposed to increase an individual's proneness to self-infiltration.

There is also evidence on the neural correlates of personal goals, imposed goals, and self-infiltrations, and whether they differ from each other. Baumann, Kuhl, and Kazén

(2005) asked participants in two experiments to squeeze a stress ball either with their left hand, which activates areas of the right cortex, or with their right hand, which activates the left cortex. Right cortex stimulation via contralateral hand contraction led to lower rates of self-infiltration in the self-discrimination task (see, for example, Kuhl & Kazén, 1994), as measured by the number of low attractive goals assigned by the experimenter but confused in memory as self-selected as compared to a baseline measure. A recent pilot study using functional magnetic resonance imaging (fMRI) explored potential brain sources of this effect in 17 participants (Quirin et al., 2020). Specifically, applying the same paradigm as Baumann, Kuhl, and Kazén (2005), we found that representations of self-selected goals activated the left ventromedial prefrontal cortex (PFC), whereas representations of imposed goals activated the right ventromedial PFC, and that the amount of activity within the right ventromedial PFC cluster was inversely related to self-infiltration rates, suggesting that the right ventromedial PFC contributes to buffering alienation. Moreover, low emotion regulation abilities (rumination tendencies) were associated with increased introjection rates, which replicated behavioral findings reported above. Importantly, rumination but also low emotional awareness and low self-esteem predicted reduced activity in the right ventromedial PFC cluster.

Not least, self-infiltration trials, that is, where participants misremembered imposed goals as self-selected, activated both the left and the right ventromedial PFC in this study, along with the dorsal anterior cingulate cortex (ACC). Unfortunately, the number of trials in the self-infiltration condition was relatively low such that these latter findings need to be interpreted with caution and additional data are necessary to corroborate these findings and to investigate potential causal dynamics between the activated areas. Still, the present findings suggest that the right ventromedial PFC plays an important role for accessing self-chosen goals and buffering them against the adverse effects of introjection of other individuals' expectations.

Critical review and outlook

So far, we have reviewed philosophical and psychological accounts of self-awareness, defined as the unawareness of the implicit system, based on the duality of mind approach. We elaborated on the relationship between direct and indirect measures and how a discrepancy between these two systems can have adverse effects. Now, we will critically reflect on the present approach, and highlight open questions as well as future directions that may deepen our insight into self-awareness.

As mentioned earlier, the discrepancies between implicit and explicit motives, affects, and goals lead to negative outcomes. These negative outcomes range from need dissatisfaction to mental illness that altogether disrupt the overall functioning of a person who is alienated from their own motives, emotions, and goals. However, it is not still clear whether the discrepancies, in and of themselves—or other variables that coincide with them—are conducive to the abovementioned adverse consequences. To illustrate, research has shown that pursuing incongruent goals leads to less effort toward achieving the goals and to need dissatisfaction (Burton, 2008; Sheldon & Kasser, 2001). Nonetheless, there are still other explanations that point out that these discrepancies do not directly link to impaired well-being. For instance, Kehr's (2004a) findings pointed

out that volitional strength mediated the relationship between the implicit/explicit motive discrepancy and subjective well-being; therefore, a lack of volitional strength or volitional depletion as a consequence of excessive implementation of volitional regulation might be the mediating variable that actually negatively affects well-being. Further research should address this issue.

Although many researchers have investigated potential antecedents of reduced awareness of motives, their research findings are not consistent. To illustrate, some researchers denote childhood experiences that impede the satisfaction of basic needs such as relatedness and autonomy, predicting self-incongruence 26 years later (Schattke et al., 2011). In fact, it is now mainly acceptable among researchers that childhood experience is a pivotal factor for self-awareness and consistency between implicit and explicit systems, but still, it is not clear how this consistency may stabilize later in life. Future research should address this question by underpinning the processes underlying self-awareness.

As to the measures of all forms of implicit/explicit discrepancies, there is a vast amount of research dedicated to assessing the correlation between implicit and explicit motives. A large fraction of the research has pointed out low correlations between explicit and implicit measures (e.g., Köllner & Schultheiss, 2014), and this low correlation has become intensified and more salient when using commensurable implicit and explicit measures (see Schultheiss et al., 2009). Moreover, implicit as well as explicit measures should be understood as process-dependent (which has not always been the case in former research)—that is, factors other than implicit motives or affect may affect the measures, which reduces their predictive validity (Meissner et al., 2019).

Indirect/implicit measures have some advantages compared to direct/explicit measures (Fazio & Olson, 2003). However, as mentioned above, there is measurement error and ambiguity in what these measures assess. For example, past research has shown that the correlations among the implicit motive measures were very low, but only two out of nine correlations between relating implicit motive measures were significant (Schüler et al., 2015). It could be the case that these measures assess different constructs instead of what they claim to assess. Therefore, further modifications in the measure should be implanted for increasing the validity of these measures.

In the case of implicit affectivity, convergent, and discriminant validity have been supported by valence-congruent findings of moderate correlations with explicit affect scales. However, some empirical findings suggest that additional research is required to understand whether implicit affect is indeed related to explicit measures. Research on stress physiology exemplifies some of the challenges, such as finding correlations between different affect measures. For example, some stress-inducing experiments were not able to find an association between heart rate variability and implicit affect (Verkuil et al., 2016). On the contrary, Brosschot et al. (2014) found that high implicit positive affect was related to faster blood pressure recovery, while finding a link between explicit positive affect and slower blood pressure recovery (which is inconsistent with the theory).

A possible explanation for the lack of convergent validity among these measures is the degree of effectiveness of the stress task selected for the experiments. Perhaps the

degree of effect of the stress task could explain why Schmukle and Egloff (2004) found that inducing a state of anxiety via a public speaking task does not influence implicit association test-anxiety scores, or Quirin, Koole, et al.'s (2009) finding that showed the stress task was not associated with a significant increase in cortisol, or even Verkuil et al.'s (2014) finding that the stressor did not significantly affect implicit anxiety. Therefore, we suggest that research should consider the importance of the appropriate stress tasks while designing the experiment. In addition, as suggested by Verkuil et al. (2014), future research should explore the possibility that implicit measures assess cognitive and somatic aspects of the emotional experience. Thus, a clearly defined theoretical framework is essential for the understanding of the stress components, as well as to reveal the interactions among them. For example, future stress research exploring implicit evaluations of threat, harm, or challenge, in addition to implicit affect could yield stronger correlations between implicit and explicit affectivity measures.

The IPANAT is currently adapted to the measurement of discrete emotions such as happiness, anger, fear, and sadness (IPANAT-BE; Hernandez, Suslow, & Quirin, 2020). These discrete emotions, which made up corresponding factor scales in the IPANAT, are generally viewed as fundamental in distinct emotion theories (see Ekman, 1992; Izard, 1977; Panksepp, 1998; Plutchik, 1994). Empirical findings show that the examination of basic emotions can add to our understanding of people's motivation and their well-being. While a growing body of research has documented the various roles that affect plays in health (Panksepp & Watt, 2011), the key importance of discrete emotions has also been examined. However, understanding the links between affectivity and health is facilitated by the discrete emotion perspective. This view emphasizes the functional purpose of discrete emotions and provides a theoretical basis to reconcile findings and evaluate how distinctive experiences have specific manifestations in physiological, cognitive, and behavioral response systems (Consedine & Moskowitz, 2007). For example, a multivariate study showed that a single item assessing sadness was a strong predictor of mortality and it was a better predictor of mortality than other items (Cooper et al., 2002). Therefore, further examination of implicit discrete emotions and emotional congruency is promising to add insight to this line of research.

Conclusion

Dual process models view mind as a combination of two different process—implicit and explicit processes—which may sometimes be in discrepancy with each other due to impaired self-awareness. The present article indicated the possible ways that these discrepancies may emerge in the mind and the adverse consequences they may have on motivation, well-being, or health. We end with a strong, promising outlook for the future to help individuals to "know thyselves" and consequently improve human flourishing.

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