Self-Awareness and Self-Regulation: A Review of Personality and Social Psychological Theory and Research

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Abstract

During the past 25 years, social and personality psychologists have searched for a better understanding of self-awareness and self-regulation. In this review article, the path of this theoretical and empirical search will be described, focusing on Duval and Wicklund's (1972) theory of objective self-awareness, Fenigstein, Scheir, and Buss's (1975) trait approach to self-awareness, and Carver and Scheier's (1981) control theory of self-regulation.

Key Words: *Self-awareness, self-consciousness, self-regulation.*

Benlik Farkındalığı ve Kendini Düzenleme: Kişilik ve Sosyal Psikolojik Kuram ve Araştırmalar Üzerine Bir Tarama

Özet

Geçtiğimiz 25 yılda sosyal psikologlar ve kişilik psikologları benlik farkındalığı ve kendini düzenleme konularını daha iyi anlayabilmek için çalışmalarını yoğunlaştırmışlardır. Bu tarama yazısında ilgili alandaki kuramsal yaklaşımlar ve görgül araştırmalar, Duval ve Wicklund'un (1972) nesnel benlik farkındalığı kuramı, Fenigstein, Scheir ve Buss'ın (1975) benlik farkındalığına kişilik özellikleri açısından yaklaşımı ve Carver ve Scheire'in (1981) kendini düzenlemede kontrol kuramı temelinde sunulmaktadır.

Anahtar sözcükler: *Benlik farkındalığı, benlik bilinci, kendini düzenleme.*

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The *self* is not a homunculus located inside the head. It also is not a "thing" separate from the person. We do not *possess* a self or *have* a self, but we become a self through maturation and socialization. For our purposes, the self will be defined as a social being with the ability to engage in symbolic communication and self-awareness. The self is a social being because we humans do not develop in isolation, but only do so within a social context. The reason the cognitive processes of symbol usage and self-awareness are so important in this definition is that both are essential for us to mutually engage in planned, coordinated activities in which we can regulate our behavior and anticipate the actions of others (Schutz, 1932; Harre, 1984). In other words, they allow us to actively create and recreate ourselves and our social world. In this review article, we will analyze two cognitive processes, namely self-awareness and self-regulation, that are central features of the self.

Self-awareness is a psychological state in which we take ourselves as objects of attention. Evolutionary psychologists suggest that self-awareness-along with symbolic communication-- may have evolved in our ancestors as a means to better deal with an increasingly complex social environment (Cairns-Smith, 1996; Sedikides & Skowronski, 1997). Self-awareness not only provided our ancestors with knowledge about their own behavior, but they could also use this inner experience to anticipate how rivals might behave in the future -perhaps in war or in social

bargaining- thus giving them an advantage in these activities. Combined with symbolic communication, self-awareness may have provided the means by which our ancestors developed an adaptive advantage in their environment, thus increasing their chances of surviving and reproducing (Humphrey, 1986).

Interestingly, we are not born with self-awareness ability, but rather, we develop it. Psychologists discovered this fact by placing a spot of rouge on babies' noses and then placing them in front of a mirror (Lewis & Brooks, 1978). Infants between the ages of 9 and 12 months treated their mirror image as if it was another child, showing no interest in the unusual rouge spot. Yet those around 18 months of age exhibited self-recognition-and thus, self-awareness ability by staring in the mirror and touching the mysterious spot on their noses. Recognizing the image in the mirror as their own, they realized that they looked different. Based on such studies, it appears that self-awareness develops at about 18 months of age (Amsterdam, 1972; Johnson, 1983), roughly the age at which children begin using language.

Research by Gallup and his coworkers suggests that we may not be the only species with self-awareness ability (Gallup, 1970; Suarez & Gallup, 1981). In one study, Gallup (1977) painted an odorless red dye on one eyebrow and one ear of anesthetized chimpanzees. When the chimps later looked into a mirror they

immediately began to touch the red dye marks on their bodies, indicating that they recognized the image in the mirror as their own. These and other studies indicate that our primate cousins (chimpanzees, gorillas, and orangutans, but not monkeys) -and perhaps even dolphins- appear to possess self-awareness ability (Anderson, 1993; Gallup & Povinelli, 1993).

Objective Self-Awareness Theory

The advent of the contemporary study of self-awareness in personality and social psychology can be traced to Duval and Wicklund's (1972) *theory* off *objective self-awareness*. Duval and Wicklund contended that a person's conscious attention can be focused in only one of two directions: either internally toward the self, or externally toward the environment. When attention is self-focused, they asserted that we tend to critically focus on and evaluate whatever aspect of the self is most important or salient to us at the time. Further, once attention is focused on some salient self-aspect, Duval and Wicklund believed that we almost always notice that there is a difference between our *real self* on that dimension (e.g., how intelligent we are) and our *ideal self* (e.g., how intelligent we desire to be). The realization of this real-ideal discrepancy induces a feeling of discomfort and we are motivated to somehow reduce the negative feeling. According to the theory, there are two basic ways that we reduce this unpleasant motivational state: we can either escape the self-aware state by focusing attention back on the environment, or reduce the unpleasant state by reducing the discrepancy between the real and ideal self. Sometimes it may be relatively easy to reduce this discrepancy, while at other times it may be much more difficult.

Objective self-awareness theory asserts that there are certain stimuli in the environment which have the effect of inducing self-awareness. For example, seeing and hearing ourselves on a videotape tends to focus our attention back on ourselves rather than outward toward the environment. However, the stimulus which may most directly induce self-awareness is a mirror, because when we look in a mirror our attention is literally turned back on us by its reflective properties. For this reason, many of the experiments designed to test this theory used mirrors to induce self-awareness.

Research has provided considerable evidence in support of this theory. In one such study, Duval, Wicklund, and Fine (1972) tested the hypothesis that people will seek to escape self-awareness when the discrepancy between the real and ideal selves is negative. College students were first given false information about their levels of creativity and intelligence, supposedly on the basis of personality questionnaires they had filled out at the beginning of the semester. Half of the students were told that they had done quite well on the tests, scoring in the upper 10 % of their class; for these students, then, their real selves were quite successful. The other half of the students were

told that they had done poorly, scoring in the lower 10 % of the class; thus, these students were led to believe that their real selves were not very successful. The students were next led to a separate room, ostensibly for a second and unrelated experiment. For half of them, the room contained a mirror which faced them and a television camera which pointed toward them; for the other half, the mirror was turned around so that its nonreflecting side was facing the students, and the television camera was also pointed away from them. Thus, half of the students should have been self-aware (due to the mirror and camera), and the other half should not have been self-aware. The students were then told to wait there for the second experimenter, but that if he did not show up in 5 minutes, to go look for him in another room. The dependent measure in the experiment was simply how long the students were willing to wait in the room. Consistent with objective self-awareness theory, those students who believed that they had done poorly on the personality tests (high discrepancy between real and ideal selves) and who were facing a mirror and television camera (self-aware attention) were the first to leave the room due to their discomfort.

What about the prediction that people who focus attention on the self will try to bring the real self into line with the ideal self? Carver (1975) provided evidence for that prediction in the following way. First, he pretested students at the beginning of a semester with a questionnaire which included items asking whether they thought the use of strong punishment in teaching was justified. Carver used these answers to select a group of students with strong pro-punishment attitudes and a group with strong anti-punishment attitudes. Later in the semester, members of these two groups had the opportunity to play the role of a teacher in an experiment, and also had the power to use electric shock on another student (the "learner") in order to improve his learning. Although the students thought they were delivering real shocks to another person, in actuality no shocks were delivered. For half the students, there was a mirror in front of them as they delivered the shocks; for the other half, there was no mirror. According to the theory, those with a mirror in front of them would experience self-awareness, and thus would be aware of the discrepancy between the ideal self (the attitudes they expressed earlier in the semester) and the real self (what kind of shocks they actually delivered). In order to keep the real-ideal discrepancy low, these students were expected to act in accordance with their attitudes; that is, they would try to make the real self conform to the ideal self. Those who were not facing a mirror would not be self-aware, and thus were expected to feel less pressure to match behavior to attitudes. This is exactly what was found. Participants with "pro-shock" attitudes who faced a mirror administered the most intense shocks of all; those with "anti-shock" attitudes facing a mirror administered the weakest shocks of all. This general pattern has been found repeatedly with a variety of other attitudes and behaviors (See Gibbons, 1983).

Over the past 25 years, a number of studies have generally supported this theory. However, one hypothesis that has generally failed to find support is the contention that self-awareness inevitably leads to the experience of negative affect (e.g., Carver & Scheier, 1978; Franzoi & Brewer, 1984; Hull & Levy, 1979; Steenbarger & Aderman, 1979). In response to this empirical criticism, Wicklund slightly modified the original theory to allow for those instances when self-awareness does not lead to negative affect (Wicklund & Frey, 1980). However, he still contended that because people are so easily dissatisfied with themselves when they engage in self-evaluation, self-awareness quite frequently does produce unpleasant affect.

The Identification of Distinct Self-Aware States and Traits

Objective self-awareness theory outlines how the psychological state of self-awareness can influence people's thoughts, feelings, and behavior. In developing this theory, Duval and Wicklund never discussed the possibility of there being anything but a general state of self-awareness, nor did they discuss the possibility of any individual differences in self-awareness. Yet in 1975, Fenigstein, Scheier, and Buss opened up both of these fields of inquiry when they published an individual difference measure, the *Self Consciousness Scale (SCS)*, to assess the dispositional tendency to engage in self-awareness.

According to these researchers, there are two different types of self-awareness in humans. *Private self-awareness* is the temporary state of being aware of hidden, private self-aspects, while *public self-awareness* is the temporary state of being aware of public self-aspects. Being asked about your current mood, seeing your face in a small mirror, or feeling the hunger pangs of your stomach will likely cause you to become privately self-aware. Being watched by others, having your picture taken, or seeing your entire body in a full length mirror can induce public self-awareness (Buss, 1980).

Although private and public self-awareness are psychological states and refer to the temporary condition of focusing attention on the self, Fenigstein, Scheier, and Buss (1975) further identified the personality trait of *self-consciousness*, which refers to a relatively permanent tendency on the part of the individual to spend more or less time in the state of self-awareness. They argued that just as there are two types of self-awareness there are also two types of self-consciousness. *Private self-consciousness* is the tendency to engage in private self-awareness (sample SCS items: "1'm always trying to figure myself out." "I'm alert to changes in my mood."), while *public self-consciousness* is the tendency to engage in public self-awareness (sample scs items: "I'm concerned about my style of doing things. "I'm usually aware of my appearance."). These traits are two distinct tendencies; therefore, a person could either be very attentive to both the private and public sides

of the self, attentive to one but inattentive to another, or relatively inattentive to both.

A number of studies have confirmed the factor structure of the SCS (e.g., Bissonnette & Bernstein, 1990; Britt, 1992), and have also found it to be a stable and valid measure of private and public self-consciousness (e.g., Davis & Franzoi, 1991; Fenigstein, 1979; Hass, 1984; Riggio, 1986). The SCS has been translated into a number of languages (e.g., Merz, 1984; Shek, 1994; Sugawara, 1984; Vleeming & Engelse, 1981), and today it is used by personality researchers throughout the world to investigate a wide variety of issues. Scheier and Carver (1985) also developed a revised version of the scale designed for use with non-college populations, but the original SCS remains the most popular version.

The inner-outer metaphor in Psychology. The identification of these two discriminated aspects of the self -private and public- is not a novel one in psychology, but instead reflects a rich tradition of relying upon the *inner-outer* metaphor in social and personality psychology (Hogan & Cheek, 1983). For example, Jung's (1923) theory of personality emphasizes the idea that people differ in terms of whether they characteristically turn psychic energy inward toward the inner world (the personality type known as introversion), or outward toward the external world (the personality type known as extraversion). Freud's (1933) personality theory emphasizes the internal, private, and largely hidden world of the self, while sociologists Mead's (1934) and Cooley's (1902) early formulations of *symbolic interactionism* are largely concerned with how our public selves are seen and judged by other people, and how this awareness shapes our subsequent actions. More recent approaches to personality, exemplified by such characteristics as field dependence-independence (Witkin, Lewis, Hertzman, Machover, Meissner, & Wapner, 1954), locus of control (Rotter, 1966), and self-monitoring (Snyder, 1974) highlight this distinction between attention to and knowledge of internal matters and attention to and knowledge of external forces. What this persistent use of the inner-outer metaphor suggests is that it has some value in making sense of our personalities because it highlights the self as both a private and a public being.

Although widespread today, there is some evidence that this distinction between private and public aspects of the self may be a relatively recent development in human history. For example, Baumeister (1986) argues that prior to the 10th century in Europe, public and private self-aspects may have been viewed as equivalent. He contends that our contemporary acknowledgement that private aspects of the self can be separate and distinct from public behavior and appearances gradually developed over the past few centuries as everyday living became increasingly compartmentalized into private and public domains.

Attention to private self-aspects. Researchers have discovered that either situational or chronic attention to private self-awareness have different consequences than that due to public self-awareness. Further, many of the effects of private self-attention are the same whether they result from the psychological state of private self-awareness or the personality trait of private self-consciousness (e.g., Carver & Scheier, 1978; Scheier, 1976; Scheier & Carver, 1980). Let us briefly review some of these similar effects of the state and trait.

One effect of being privately self-aware is *intensification of affect*, meaning that any positive or negative feelings experienced when privately self-aware will be exaggerated (Scheier & Carver, 1977). As Buss (1980) states it, private self-attention serves "to deepen melancholy, to heighten elation, to make pain more painful and pleasure more pleasurable..." (p. 14). Thus, engaging in private self-awareness will serve to exaggerate whatever affect we feel; however, it will not intensify a private event which is affectively neutral. A second consequence, *clarification of knowledge*, means that private events become clearer and more distinct, thus increasing our ability to accurately report on them (Davies, 1994; Gibbons, Carver, Scheier, & Hormuth, 1979). Private self-awareness will therefore make us more clearly aware of an aching muscle, will let us more accurately know our attitudes, and will bring our memories or fantasies more sharply into focus. It does not matter whether the private event is affectively charged or affectively neutral; all

internal events are more clearly experienced as a result of private self-awareness. Finally, a third consequence of private self-awareness is *greater adherence to personal standards of behavior* (Carver, 1975; Froming, Nasby, & McManus, 1998). Thus, when privately self-aware, we are more likely to act in line with our personal beliefs than to conform to social pressures.

Based on these findings, one question that has been asked is whether it is better to be chronically attentive or inattentive to private self-aspects. Is it true that the more we learn about ourselves the better persons we become? Or are those people correct who sometimes warn us not to try to analyze our thoughts and feelings so much? On the plus side, Davis and Franzoi have found evidence that high private self-conscious individuals are more likely to reveal private self-aspects to their friends and romantic partners, and this self-disclosure in turn reduces loneliness and increases relationship satisfaction (Davis & Franzoi, 1986; Franzoi, Davis, & Young, 1985; Franzoi & Davis, 1985). In addition, research by Suls and his colleagues indicate that the physical health of persons high in private self-consciousness is less likely to be adversely affected by stressful life events than is the health of low self-conscious persons (Mullen & Suls, 1982; Suls & Fletcher, 1985). One explanation for this finding is that people who regularly pay attention to their physiological states (an aspect of the private self) are more likely to become aware of early warning signs of illness-inducing stress,

and thus are more likely to take precautionary steps to avoid the onset of illness.

On the negative side, other studies indicate that habitual attention to private self-aspects can be a contributing factor to depression (Ingram, 1990). Why might heightened private self-awareness be associated with depression? One possible reason is that greater attention to private self-aspects intensifies a person's current emotional state, including depression. Thus, the *trait* of private self-consciousness or the *state* of private self-awareness might increase feelings of depression among those who are already depressed (Nix, Watson, Pyszcznski, & Greenberg, 1995).

Taking these studies into account, it appears that there are both benefits and drawbacks to attending to our private self. Instead of high or low private self-conscious individuals being healthier than the other, they may simply represent different motivational orientations toward the self.

Attention to public self-aspects. As with private self-awareness, the psychological state of public self-awareness and the personality trait of public self-consciousness often have similar effects. One such similar effect is *evaluation apprehension* when we realize we are the object of others' attention (Fenigstein, 1979; Fenigstein & Vanable, 1992). This is so because you have learned through experience that public scrutiny often results in either positive or negative outcomes. Evaluation apprehension is the reason

we get butterflies in our stomachs before making an important speech or calling that special person up for a date. A second effect is a *temporary loss off self-esteem* due to realizing that there is a discrepancy between our ideal and actual public selves. This explains why we feel badly after a failed presentation or date request. Finally, a third consequence of public self-awareness is *greater adherence* to *social standards of behavior*, meaning a heightened degree of conformity (Duval & Wicklund, 1972; Froming & Carver, 1981; Yoshitake, 1990).

The interaction of private and Public self-consciousness. Much of the research dealing with public self-consciousness has also investigated private self-consciousness at the same time (e.g., Carver & Humphries, 1981; Carver & Scheier, 1981). The reason is that in many situations it would seem that private and public self-awareness should lead to different, and sometimes opposite, behaviors. Specifically, engaging in private self-awareness should often lead us to act in keeping with our private beliefs while public self-attention should lead us to act in ways that we think others approve, regardless of our private beliefs. According to this logic, then, people who are high on private self-consciousness and low on public self-consciousness should be the ones most likely to act in line with their true attitudes; they would know their true attitudes better (clarification) and they would be relatively unconcerned about how they appear to others. The other combinations of private and public self-consciousness should show much less consistency

between private attitudes and public behavior. Anyone low in private self-consciousness would not have the clear knowledge of their attitudes necessary to act consistently with them, while someone high in private self-consciousness and high in public self-consciousness would have the necessary knowledge but might not act consistently because of a concern about the judgement of others.

Scheier (1980) directly tested this idea by first using a questionnaire to measure student's private attitudes toward the use of physical punishment as a learning technique. Several months later some of these same people came to the laboratory in groups of 2, 3 or 4, and were told that they would be writing an essay on the use of punishment in child-rearing, and that they would later publicly discuss their views with the other group members. The essays were later evaluated by independent raters as to how favorable they were toward the use of punishment. Thus, Scheier had a measure of private attitude (the questionnaire responses) and a measure of a public expression of that attitude (the essay). As expected, those high in private and low in public self-consciousness showed a very strong correlation (r = .64) between their initial attitudes and later essay; those with any other combination of private and public self-consciousness showed almost no correlation. Thus, it appears that even when people have an accurate understanding of their own attitudes as a result of their habitual private self-awareness, being simultaneously high in public self-consciousness can lead to behavior

that runs counter to those attitudes. Put simply, the concern over social evaluation is too strong.

What causes individual differences in self-consciousness? Virtually all research devoted to private and public self-consciousness has attempted to determine what effects different levels of each trait have on cognition, affect, and behavior. But why do some of us habitually attend to our private and/or public self-aspects while others of us chronically ignore one or both of these self-aspects? What are the reasons? It has nothing to do with intelligence (Carver & Glass, 1976). Significant life experiences during the formative years have been offered as a possible explanation (Buss, 1980), and there is some evidence that high private self-consciousness is associated with maternal warmth, while high public self-consciousness is associated with greater parental discipline and achievement demands (Klonsky et al, 1990). Regarding any cultural effects on level of self-consciousness, there is some evidence that individualists have higher levels of private self-consciousness than collectivists (Oyserman, 1993). These differences are likely related to the fact that in individualist cultures there is a greater focus on the self as having distinct personal needs and desires. Despite this possible cultural influence, at present, personality and social psychologists know considerably more about the consequences of self-consciousness differences than they do about the causes.

Self-Regulation

Closely related to self-awareness is *self-regulation*, which refers to the ways in which we control and direct our own actions. Self-regulation is related to self-awareness because we must be self-aware in order to engage in self-regulation. Research by Mischel and his coworkers have analyzed how self regulation provides people with the capacity to forgo the immediate gratification of small rewards in order to later attain larger rewards (Mischel, 1974, 1996). Anyone who has ever foregone an enticing short-term reward to work on a less desirable but important task understands this particular self-regulatory process. People who learn how to delay gratification early in childhood are significantly better adjusted later in life -both academically and socially- than low self-regulators (Mischel, Cantor, & Feldman, 1996; Shoda, Mischel, & Peake, 1990).

Control theory of self-regulation. One theory which incorporated the concept of self-regulation to extend and expand upon both objective self-awareness theory and the discriminated state-trait approach was Carver and Scheier's *control theory of self-regulation* (Carver, 1979; Carver & Scheier, 1981, 1986). In this theory, they contend that self-awareness allows us to assess how we are doing in meeting our goals and ideals. At the core of this assessment process is a cognitive feedback loop, summarized by the acronym TOTE (Miller, Galanter, & Pribram, 1960), which stands for the steps taken in self-regulation: Test-Operate-Test-Exit. In self-regulation, engaging in self-awareness allows us to compare how we are doing against some standard. This is the first *test* phase. When we are privately self-aware we will compare ourselves against a private standard (for example, our own values), but when we are publicly self-aware we will compare ourselves against a public standard (for example, our beliefs about what other people value). In the first test phase, if we discover that we are falling short of the standard (for example, not studying enough), then we *operate* to change ourselves (we study harder). Soon, we self-reflect again -the second *test* phase- to see whether we are moving closer to reaching our standard. This test and operate cycle repeats itself until there is no longer a difference between our behavior and the standard. When we meet the standard, the control process is ended, we feel happy, and we *exit* the feedback loop. If repeated attempts to move closer to the standard fail, we will feel bad and eventually exit the loop (Carver & Scheier, 1990b).

How exactly does this control theory differ from Duval and Wicklund's objective self-awareness theory? Like Duval and Wicklund, Carver and Scheier propose that self-awareness leads to an attempt to bring an existing state (the real self) into line with a predetermined standard (the ideal self). However, one key difference between the two theories is their explanation of *why* a discrepancy between existing state and standard leads to behavior change. Objective self-awareness theory is a motivational theory; it

claims that the discrepancy between the real and ideal self leads to an unpleasant motivational state, which we strive to reduce. In contrast, Carver and Scheier claim that simply being aware that there is a discrepancy between one's ideal and real selves does not mean that a person will necessarily experience any negative feelings. As a result, there is no pressure to get rid of those feelings by reducing the real-ideal discrepancy. Instead, they believe that the shifting of behavior to bring it into line with standards occurs almost automatically -it is a natural consequence of the cognitive process of self-regulation. Thus, the latter theory reflects more of a cognitive than a motivational approach to self-regulation.

Although these two motivational and nonmotivational approaches often make the same predictions about how people will act, Carver and Scheier assert that there is reason to believe that their approach is superior. Specifically, they point to the prediction of objective self-awareness theory that becoming self-aware almost always leads to negative affect because of the real-ideal self discrepancy. As noted earlier, there are several studies which have failed to find that the state of self-awareness produces unpleasant feelings. If self-awareness invariably leads to a negative motivational state, why didn't these studies find it? Carver and Scheier's explanation is that there is only one kind of situation in which self-awareness will lead to negative affect -when the discrepancy between the existing state and the standard cannot be reduced. That is, only when we become aware

of a shortcoming which cannot be overcome will unpleasant feelings result.

Self-regulation failure. What specifically happens to us emotionally when self-regulation doesn't lead to us meeting our standards? Higgins (1987, 1989) suggests that these nonreducible self-discrepancies produce strong emotions. When we realize there is a discrepancy between our actual self and our *ideal self* (for example, "I wish I was more physically attractive."), we experience *dejection-related emotions,* such as disappointment, frustration, and depression. On the other hand, when we notice a discrepancy between our actual self and what we think we ought to possess *(ought self)* to meet our obligations and responsibilities (for example, "I should be helping my family out more financially."), we are vulnerable to *agitation-related emotions,* such as anxiety and guilt. A number of studies have found that people with considerable self-discrepancies not only experience negative emotions but are often indecisive in their behavior, have unclear self-concepts, and experience a loss of self-esteem (Dana, Lalwani, & Duval, 1997; Van Hook & Higgins, 1988). The more important these self-discrepant attributes are to the self-concept, the greater are the negative emotions experienced (Higgins, Roney, Crowe, & Hymes, 1994).

Based on our previous discussion, it should not be surprising that research suggests that high private self-conscious people are more likely to experience these negative emotions than are those

low in self-consciousness. For example, Hull, Reilly, and Ennis (1990) studied the degree to which college students believed that they were "living up" to what they felt a college student should be. As expected, because they were more attentive to real-ideal self-discrepancies, failing to live up to the student role was more strongly linked to depressive affect for students who were higher in private self-consciousness. Of course, these findings do not mean that an inescapable depressive state is created when high private self-conscious individuals fail to successfully self-regulate. Under certain circumstances, however, in which one cannot meet personal standards, habitual self-awareness can be associated with increased risk for dysfunctional behavior due to depressive self-awareness (Pyszczynski & Greenberg, 1987; 1992).

Self-Regulation Depletion

Based on our discussion thus far, it appears that attending to and meeting our standards is an important function of the self. Although a high capacity for self-regulation appears to improve our chances for success in life, there is evidence that self-regulating on one task makes it harder to immediately self-regulate on unrelated tasks. For example, Muraven and his colleagues (1998) instructed some research participants to exercise self-control by suppressing their emotional reactions to an upsetting movie on environmental disasters. In contrast, other participants were either given no emotional control instructions or were told to increase their emotional responses by

"really getting into the film." In this study, self-regulation was measured by determining how long participants would later persist at a difficult physical task, namely squeezing a hand grip as long as possible. Such squeezing requires self-control to resist giving up and releasing the grip. Participants squeezed the grip both before (pretest) and after (posttest) watching the movie, and the difference between the pre- and posttest was the dependent measure of self-regulation depletion. Consistent with the hypothesis that self-regulation strength is weakened following the exercise of self-control, those who were told to control their emotions while watching the upsetting film exhibited self-regulation depletion as measured by the hand grip test. No such depletion was found in the other participants.

Additional support for this depletion effect has also been found in other studies. In one experiment, Baumeister and his colleagues hypothesized that an act of self-control -in the form of resisting a delicious food treat- would make it harder for participants to later persist at a difficult and frustrating task (Baumeister, Bratslavsky, Muraven, & Tice, 1998). To test this hypothesis, participants were instructed to skip one meal before showing up for their individual session in what was described as a taste perception study. Upon arriving at the laboratory, participants were greeted by a delicious aroma of freshly baked chocolate chip cookies. Next they were presented with either a stack of the cookies combined with some chocolate candies, or a bowl of red and white radishes. The experimenter

explained that chocolates and radishes had been selected for the taste perception study because they were both very distinctive foods. She further explained that the following day their sensation memory for one of these foods would be tested (a deception).

Participants in the "radish" condition were then asked to take about five minutes to eat at least two or three radishes while the experimenter was out of the room and not to eat any of the chocolate food. Participants in the "chocolate" condition were given similar instructions for the cookies and candies. It was assumed -and later confirmed by participants' own self-reports- that eating radishes in the presence of delicious chocolate treats required high self-regulation, while eating chocolates in the presence of radishes required low self-regulation. Participants eating behavior was unobtrusively observed through a partially-covered one-way mirror to verify that they only ate their assigned food. After five minutes, the experimenter returned and asked the participants to provide her with some preliminary data that would help other researchers learn whether college students' problem-solving abilities differed from that of high school students. Unbeknownst to the participants, the problem-solving task -which consisted of geometric puzzles- was designed to be impossible to solve. This was done to evoke frustration in the participants. Although the problem-solving study was described as being unrelated to the taste perception study, in fact, how long the participants worked on the puzzles was the main dependent variable in the

experiment. There also was a "no-food" control condition in which some participants skipped the food part of the experiment and were only asked to complete the problem-solving task.

Consistent with the depletion hypothesis, results indicated that the radish participants quit sooner on the frustrating problem-solving task and also tried to solve fewer puzzles than did the chocolate or control participants. The chocolate participants' task persistence did not differ from that of the control group. Self-reports following the problem-solving task also indicated that the radish participants felt more tired than the other two groups. These findings cannot be explained by the possibility that eating chocolates instead of radishes *(low self-regulation)* improved persistence, because the chocolate-eating participants did not work any longer on the tasks than did the participants who ate no food at all. Instead, it appears that wanting to eat chocolates but forcing oneself to eat radishes *(high self-regulation)* depleted some psychological resource that fuels self-regulation.

In explaining such findings, Baumeister and his coworkers (1994) propose that controlling or regulating our own behavior is best conceptualized in terms of the following principles from a *strength model* of self-regulation:

(1) At any give time, we only have a limited amount of energy available to self-regulate.

(2) Each exercise of self-regulation depletes this limited resource for a period of time.

(3) Right after exercising self-regulation in one activity, we will find it harder to regulate our behavior in an unrelated activity.

According to this self-regulation model, for instance, if a person is on a diet and is also studying hard for college exams, if he forces himself to study instead of going to a party with friends, he should be more likely to give in to a "snack attack" later that evening. In a very real sense, his lack of will power in dealing with food is a direct result of the earlier exertion and depletion of his self-control resources in the academic realm.

If self-regulation depletion resulted in only people breaking their diets it would not be of much concern to psychologists. Unfortunately, cultures throughout the world suffer from a broad range of problems -crime, drug addiction, teen pregnancy, domestic violence- partly stemming from self regulation failure. Although self-regulation is often a difficult and unpleasant activity, learning how to exercise it will bring dividends not only to ourselves, but to society as a whole.

Summary

This article has reviewed current theories and research which deal with the issues of self-awareness and self-regulation. Duval and Wicklund's theory of objective self-awareness was the first of these modern theories to be formulated. According to this theory, when something in the environment (like a mirror) induces self-awareness, it makes us aware of the discrepancy which typically exists between our actual behavior and the idealized standards of behavior which we possess. Becoming aware of our shortcomings produces an unpleasant affective state, which leads either to attempted escape from the self-focused attention or to efforts directed toward a reduction of the real-ideal discrepancy. One common outcome of self-awareness, then, is said to be a closer correspondence between one's actual behavior and one's behavioral standards. Considerable research evidence supports this theory.

With the publication of Fenigstein, Scheier, and Buss' Self-Consciousness Scale (SCS) in 1975, researchers began to distinguish between attention to private self-aspects and public self-aspects, and studied the different kinds of behavior that followed from these different types of self-awareness. In addition, the SCS allowed researchers to identify individuals who differed in terms of their ongoing dispositional tendency to be self-aware.

Closely related to self-awareness is self-regulation. Carver and Scheier's control theory of self-regulation extended and expanded upon both Duval and Wicklund's objective self-awareness theory and the discriminated state-trait approach of Fenigstein, Scheier, and Buss. In this theory of selfregulation, they contend that behavior is regulated by a set of internal processes which compare current behavior with a preset behavioral

standard, and then strive to minimize any discrepancies. Although this theory clearly has some similarities to objective self-awareness theory, it differs from that theory in its rejection of unpleasant affect as the motivator of behavior change. Recent studies suggest that although a high capacity for selfregulation is associated with success in life, exerting self-control on one task may make self-regulation immediately more difficult on other tasks.

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