Experimental Psychology: Human Perception and Performance, 1, 141–151.
Scheier, M. F., & Carver, C. S. (1988). A model of behavioral self-regulation: Translating intention into action. In L. Berkowitz (Ed.), *Advances in experimental social psychology: Vol. 21. Social psychological studies of the self: Perspectives and programs* (pp. 303–346). San Diego, CA: Academic Press.
Shah, J. (2003). Automatic for the people: How representations of significant others implicitly affect goal pursuit. *Journal of Personality and Social Psychology, 84,* 661–681.
Shah, J. Y., Kruglanski, A. W., & Friedman, R. S. (2003). Goal systems theory: Integrating the cognitive and motivational aspects of self-regulation. In S. J. Spencer, S. Fein, M. P. Zanna, & M. A. Olson (Eds.), *Motivated social perception: The Ontario symposium, Vol. 9* (pp. 247–275). Mahwah, NJ: Lawrence Erlbaum Associates.
Shiffrin, R. M., & Dumais, S. T. (1981). The development of automatism. In J. R. Anderson (Ed.), *Cognitive skills and their acquisition* (pp. 111–140). Hillsdale, NJ: Lawrence Erlbaum Associates.
Shiffrin, R. M., & Schneider, W. (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending, and general theory. *Psychological Review, 84,* 127–190.
Singer, J. L. (1966). *Daydreaming.* New York: Random House.
Singer, J. L. (1975). Navigating the stream of consciousness: Research in daydreaming and relate inner experience. *American Psychologist, 30,* 727–738.
Srull, T. K., & Wyer, R. S. (1980). Category accessibility and social perception: Some implications for the study of person memory and interpersonal judgments. *Journal of Personality and Social Psychology, 38,* 841–856.
Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review, 101,* 34–52.
Wegner, D. M. (1997). When the antidote is the poison: Ironic mental control processes. *Psychological Science, 8,* 148–150.
Wegner, D. M., & Bargh, J. A. (1998). Control and automaticity in social life. In S. T. Fiske & D. T. Gilbert, (Eds.), *The handbook of social psychology* (pp. 446–496). New York: McGraw-Hill.
Wegner, D. M., & Erber, R. (1992). The hyperaccessibility of suppressed thoughts. *Journal of Personality and Social Psychology, 63,* 903–912.
Wegner, D. M., Schneider, D. J., Carter, S. R., & White, T. L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology, 53,* 5–13.
Wegner, D. M., & Wenzlaff, R. M. (1996). Mental control. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 466–492). New York: Guilford Press.
Wiener, N. (1948). *Cybernetics; or control and communication in the animal and the machine.* Oxford: Wiley.
Williams, C. W. (1993). The effect of priming causal dimensional categories on social judgments. *Social Cognition, 11,* 223–242.
Wolfe, C. T., & Crocker, J. (2002). What does the self want? A contingencies of self-worth perspective on motivation. In S. S. Z. Kunda (Ed.), *The Ontario Symposium: Goals and motivated cognition* (pp. 147–170). Hillsdale, NJ: Lawrence Erlbaum Associates.
Wright, R. A. (1996). Brehm's theory of motivation as a model of effort and cardiovascular response. In J. A. Bargh & P. M. Gollwitzer (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 424–453). New York: Guilford Press.
Wrosch, C., Scheier, M. F., Miller, G. E., Schulz, R., & Carver, S. C. (2003). Adaptive self-regulation of unattainable goals: Goal disengagement, goal reengagement, and subjective well-being. *Personality and Social Psychology Bulletin, 29,* 1494–1508.
Zeigarnik, B. (1938). On finished and unfinished tasks. In W. D. Ellis (Ed.), *A source book of gestalt psychology* (pp. 300–314). New York: Harcourt Brace & World. (Reprinted and condensed from *Psychologische Forschung, 9,* 1927, 1–85.)
Zwaan, R. A., & Truitt, T. P. (1998). Smoking urges affect language processing. *Experimental and Clinical Psychopharmacology, 6,* 325–330.

CHAPTER 29

Living on the Edge: Shifting Between Nonconscious and Conscious Goal Pursuit

Peter M. Gollwitzer, Elizabeth J. Parks-Stamm, *and* Gabriele Oettingen

Abstract

This chapter discusses recent research exploring how shifts between conscious, controlled processing and automaticity affect goal pursuit. It begins by reviewing past approaches to nonconscious goal pursuit, including the search for both similarities between conscious and nonconscious goal pursuit and differences between the two. It then addresses the consequences of shifting between conscious and nonconscious goal striving, and the question of whether people can strategically shift from effortful, controlled goal striving to automaticity through forming implementation intentions.

Keywords: goal-directed behavior, controlled processing, automaticity, nonconcious goal pursuit, goal striving

This chapter discusses recent research exploring how shifting between conscious, controlled processing, and automaticity affect goal pursuit. First, we review past approaches to nonconscious goal pursuit, including both the search for similarities between conscious and nonconscious goal pursuit and differences between the two. We next address the consequences of shifting between conscious and nonconscious goal striving. We start by addressing the shift from nonconscious goal pursuit to conscious awareness. What is the consequence of becoming aware of a behavior driven by a nonconscious goal pursuit? We then address the question of whether people can strategically plan to shift from effortful, controlled goal striving to automaticity through forming implementation intentions. How is this achieved, and what are the consequences of this strategic shift to automatic goal striving?

Conscious Versus Nonconscious Goal Pursuit

The Origins of the Distinction Between Conscious and Nonconscious Goal Pursuit

The descriptions of successful goal pursuit have changed drastically in the history of psychology (Gollwitzer & Moskowitz, 1996; Oettingen & Gollwitzer, 2001). *Behaviorists* (e.g., Skinner, 1953) defined goal striving objectively, from the perspective of the researcher rather than from the perspective of the actor. Accordingly, they focused on the observable features of goal striving; effective goal striving was defined

as being associated with persistence (striving until the goal is reached), appropriateness (when one path to the goals is blocked, an alternative path to the same goal is taken), and searching (restlessness in the presence of good opportunities to meet the goal). Facilitating goal attainment according to this tradition involved shaping behavior related to these features by using classic and instrumental conditioning principles.

Cognitive social learning theorists (e.g., Bandura, 1977; Heckhausen, 1977; Mischel, 1973), on the other hand, focused on the internal subjective goal of the individual as the reference point for goal striving. Successful goal striving now required conscious involvement in goal pursuit, committing to proper goals, and effectively guiding their implementation. From this perspective, strong goal commitments are assumed to be formed when the given goal is both desirable and feasible (Ajzen, 1985; Chapter 5); thus, the person should first consult his or her needs and motives to determine the desirability of the potential goal (Brunstein, Schultheiss, & Graessmann, 1998) and then reflect on his or her own relevant skills, talents, and competencies, as well as facilitating or hindering external influences, to compute the likelihood that goal-related outcomes may actually be obtained. This type of reflection should require conscious processing.

Recent research shows that even the mode of thought with which these issues are approached (e.g., mentally contrasting the desired future with the obstacles of present reality versus only dreaming about a positive future or only dwelling on the negative reality) makes a difference; high-feasibility beliefs are translated into strong goal commitments most effectively when one mentally contrasts the desired future with obstacles of present reality (Oettingen, Pak, & Schnetter, 2001). Recent research also shows that it matters how the desired goal state is framed. Conceptualizing one's goals in terms of promoting positive outcomes as opposed to preventing negative outcomes (promotion versus prevention goals; Higgins, 1997), acquiring competence as opposed to demonstrating the possession of competence (learning versus performance goals; Dweck, 1999), and attaining external as opposed to internal rewards (extrinsic versus intrinsic goals; Ryan & Deci, 2000) affect goal attainment; promotion, learning, and intrinsic conceptualizations are commonly associated with better outcomes than prevention, performance, and extrinsic conceptualizations. Even the degree of precision with which the desired outcome is spelled out (e.g., the time frame and standards of quantity and quality for its completion) affects a person's chances to reach the desired goal. Goals with a proximal as compared to a more distal time frame (or deadline) are more likely achieved, and it is the goals with specific rather than "do your best" standards that lead to better performances (Locke & Latham, 2002).

But goal attainment cannot be secured solely by forming strong goal commitments and framing the goals at hand in an appropriate manner (Gollwitzer, 1990, 2006). There is the second issue of implementing a chosen goal, meaning that people need to successfully tackle a series of implementational issues. There are four problems that stand out for goal implementation: getting started with goal pursuit, staying on track, calling a halt, and not overextending oneself (Gollwitzer & Sheeran, 2006). Getting started with goal pursuit is often difficult because we are busy with other things and thus fail to detect, attend to, and remember to use good opportunities to act toward the chosen goal. Even if the presence of a good opportunity is detected, we are often too slow to seize it in time and thus fail to initiate goal-directed behaviors. Once we do get started with goal-directed actions, we face the problem of staying on track. Persevering becomes difficult when distractions mount (particularly very tempting distractions; Mischel, Shoda, & Rodriguez, 1989; Chapter 23), when forced disruptions demand the resumption of goal-directed activity (Gollwitzer & Liu, 1995; Mahler, 1933), and when increases in the difficulty of the task demand more effort expenditure (Wright, 1996). Moreover, successful goal implementation requires that we call a halt to using a chosen means or route to goal attainment if this means (or route) lacks instrumentality (Kruglanski, 1996), and it demands disengagement from goal pursuit altogether if the originally desired goal turns into something unattractive or unfeasible (Klinger, 1977). Finally, goals cannot be implemented successfully if we overextend ourselves when striving for the goal at hand. People commonly hold more than one goal, and exceeding one's limitations in the pursuit of the goal at hand can be a disadvantage with respect to the successful implementation of the other goals one is also holding (i.e., ego-depletion effect; Muraven & Baumeister, 2000). From the perspective of cognitive social learning theory, all these problems can be tackled by engaging in conscious self-regulatory thought. For instance, it has been observed that delay of gratification is enhanced when the rewards at issue are thought of in an abstract (as opposed to concrete) manner (Metcalfe & Mischel, 1999).

In most recent history, the psychology of goals has been enriched by the assertion that people's thoughts, feelings, and actions might be affected not only by conscious but also by nonconscious goal striving. In his auto-motive model, Bargh (1990) built on *automaticity* research of the 1970s and especially 1980s that demonstrated the automatic activation capability of social mental representations, such as trait concepts (e.g., honest or aggressive), attitudes, and group stereotypes (reviews by Bargh, 1989; Brewer, 1988; Wegner & Bargh, 1998; Chapter 9). This research showed that frequently used mental representations will, over time, become active when relevant information is encountered in the environment. For stereotypes, relevant cues may include easily identifiable group features, such as skin color, gender, accent, and so on. For attitudes, an environmental trigger could be the mere presence of the attitude object in the environment (Fazio, 1986). For trait concepts, features of observed social behaviors corresponding to the trait in question could activate these representations (Uleman, Newman, & Moskowitz, 1996).

The principle underlying these cases of automatic process development was that automatic associations are formed between the representations of environmental features (such as attitude objects or common situations and settings) and other representations (such as evaluations or stereotypes, respectively) to the extent that they are consistently active in memory at the same time (Hebb, 1948; Chapter 20). If one repeatedly and consistently thinks of members of a particular social group in stereotypic ways, for instance, then eventually the stereotype would become active automatically in the presence of a member of that group (Bargh, 1989; Brewer, 1988). Under the assumption that goals, too, are represented mentally and become automatically activated by the same principles, goal representations should also be capable of automatic activation through contact with features of the contexts in which those goals have been pursued often and consistently in the past (Chapter 21). If, for a given individual, interaction with one's colleagues usually leads to competitive behavior, then the goal of competition should become automatically activated in the mere presence of a colleague.

In other words, a competition goal should become active even though the person may not intentionally and consciously choose to compete at that time and in that situation. The auto-motive model further asserts that once activated in this unconscious manner, the goal representation should then operate in the same way as when it is consciously and intentionally activated. That is, the model predicts that an automatically activated goal would have the same effects on thought, feelings, and behavior as when the person consciously pursues that same goal (i.e., as when the goal is activated by an act of conscious will).

First-Generation Research on Nonconscious Goal Pursuit: Searching for Similarities to Conscious Goal Pursuit

It is often implicitly assumed that successful goal pursuit necessitates conscious involvement. Sometimes this assumption is even expressed explicitly. For instance, Dehaene and Naccache (2001) suggest that consciousness is required for three important mental operations: the maintenance of information over time (i.e., beyond the immediate perception), the planning and enactment of novel strategies, and the generation of intentional, goal-directed behaviors. This claim raises the question of whether the theoretical derivations on which the auto-motive model rests are actually unfounded. Accordingly, first-generation experimental research on the auto-motive model focused on the following questions: Can we observe effects on thoughts, feelings, and behaviors by implicitly activated (primed) goals? And is automatic goal pursuit characterized by the same features as is conscious goal pursuit?

The aim of first-generation research on nonconscious goal pursuit was to document the similarities between conscious and nonconscious goal pursuit (summaries by Chartrand, Dalton, & Cheng, 2007; Gollwitzer & Bargh, 2005). For example, based on an early study (Hamilton, Katz, & Leirer, 1980) showing that individuals with a conscious impression-formation goal recalled information in a more organized way than those with a memorization goal, Chartrand and Bargh (1996) primed participants with these processing goals through exposure to goal-related words within scrambled sentences. Again, they found that those primed with impression-formation goal-related words were more likely to organize these behaviors by categories than those primed with a memorization goal. Subsequent research has shown that nonconscious activation of other goals, including achievement goals (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001, studies 1 and 2), egalitarian goals (Moskowitz, Gollwitzer, Wasel, & Schaal, 1999), interpersonal goals (Fitzsimons & Bargh, 2003), and the goals of significant others (Shah, 2003), results in the cognition and behavior expected from conscious goal pursuit.

In addition to behavioral outcomes, nonconsciously activated goals exhibit the motivational qualities traditionally considered to be characteristics of conscious goal striving (Gollwitzer, 1990; Lewin, 1951). Using paradigms designed to elucidate these classic goal characteristics, Bargh et al. (2001) found that the activation of nonconsciously activated goals increased in strength over time until acted on (study 3), produced persistence when obstacles were encountered (study 4), and brought about resumption of goal-directed behaviors following interruption (study 5). Thus, these studies suggest that nonconscious priming activates goals themselves, resulting in cognition, behavior, and goal-relevant motivational qualities in line with consciously set goals. Kawada, Oettingen, Gollwitzer, and Bargh (2004) even observed that the projection of one's own goals on others holds for conscious and nonconscious goals alike.

The activation of goals does not occur only through semantic primes in the laboratory; relevant goals can also be activated outside of awareness by objects and individuals in the environment. Significant others can activate the goals that they have for you (Shah, 2003), or they can activate the goals that you normally pursue when you encounter these individuals (Fitzsimons & Bargh, 2003). For example, Fitzsimons and Bargh (study 1) approached individuals waiting at the gate in an airport and asked them to answer a few questions about either a friend or a colleague. Activating the representation of a friend in this way activated the goals that participants normally pursue with these individuals (e.g., helping), leading to more offers to help the experimenter following the activation of a friend than a colleague. Other individuals can also nonconsciously activate goals through a process known as "goal contagion." Aarts, Gollwitzer, and Hassin (2004) demonstrated that a goal can be nonconsciously activated merely through the presence of others enacting a behavior that implies that goal (Chapter 26). However, goal contagion took place only when the goal was contextually and socially appropriate. This research illustrates that goals can be nonconsciously activated by the mere presence of others, a social trigger of a personal nonconscious goal pursuit.

In line with this approach of highlighting the similarities between conscious and nonconscious goal pursuit, Chartrand (1999) has suggested that the emotional consequences of success or failure at conscious and nonconscious goal pursuits do not differ either. Chartrand (1999, in Chartrand et al., 2007) primed participants with words related to an achievement goal (or neutral words) and then led them to either succeed or fail in a subsequent task. Those who had been primed with the goal to achieve reported being in a better mood following success than those who had not been primed with a goal, whereas those who failed following goal priming reported being in a worse mood than those who had not been primed with a goal. This work demonstrates the similarities between the emotional consequences of completed conscious and nonconscious goal pursuit, with successful versus unsuccessful completion of nonconscious goal pursuits leading to the emotional consequences expected from conscious goal pursuits.

Second-Generation Research on Nonconscious Goal Pursuit: Potential Differences From Conscious Goal Pursuit

Although there is ample evidence now that there are many similarities between conscious and nonconscious goal pursuit, recent research has begun to investigate the differences between goal striving resulting from conscious versus nonconscious goal activation (Gollwitzer et al., 2006). The relative advantages of conscious versus nonconscious goal pursuit can be inferred by looking at theoretical approaches to conscious versus nonconscious mental operations in other fields. For instance, Dijksterhuis's unconscious thought theory (Dijksterhuis, 2004; Dijksterhuis & Nordgren, 2006) distinguishes between processes associated with conscious and nonconscious thought in decision making. This theory proposes a number of principles regarding conscious and nonconscious thought; we focus on two of these principles here that are most relevant to potential differences between conscious and nonconscious goal pursuit. The first, the capacity principle, proposes that whereas conscious thought is limited by capacity (i.e., conscious decision makers must focus on a limited numbers of features), unconscious

thought may incorporate many more factors in a decision (Dijksterhuis & Nordgren, 2006).

THE CAPACITY ISSUE

The capacity principle is particularly relevant to goal striving because conscious self-regulation draws from a limited resource that can be depleted. Thus, conscious goal striving should be limited by capacity as well. Ego-depletion studies (Muraven & Baumeister, 2000) demonstrate that engaging in self-control with respect to a first task deleteriously affects performance on a subsequent task that also necessitates self-control to attain a good performance. The capacity principle therefore suggests that conscious goal striving should be hurt by being in a state of ego depletion more so than nonconscious goal striving, and striving consciously should lead to more ego depletion than striving nonconsciously. At least for the first conclusion there is some evidence. A recent study by Govorun and Payne (2006) looked at the effects of ego depletion on the automatic versus the controlled components of self-regulation. After performing an ego depletion task designed to drain self-regulatory resources, participants completed the weapon identification task, in which they had to identify whether an object was a weapon after seeing briefly presented black or white faces (Payne, 2001). Using the process dissociation procedure (Jacoby, 1991), Govorun and Payne found that ego depletion affected the controlled component of the response but did not affect automatic race bias in the subsequent weapon identification task. Although this does not directly address the hypothesis that nonconscious goal striving should be less affected by ego depletion than conscious goal striving, it does suggest that automatic self-regulatory processes are less affected by ego depletion than controlled processes. Further research could expand on these findings, examining whether nonconscious goal striving is indeed less limited by capacity than conscious goal striving and whether nonconscious goal striving produces less ego depletion than conscious goal striving.

THE REFLECTIVE VERSUS REFLEXIVE CONTROL ISSUE

A second principle from Dijksterhuis's unconscious thought theory, the bottom-up-versus-top-down principle (Dijksterhuis & Nordgren, 2006), also sheds light on possible differences between conscious and nonconscious goal striving. In line with Sloman (1996), Dijksterhuis argues that conscious processing is hierarchical, and conscious thought is therefore more driven by broad concepts and schemas (Chapter 5). Nonconscious processing, on the other hand, integrates information in a summative fashion. It makes sense that nonconscious goal striving (i.e., striving without awareness of a goal) would work in much the same way. Whereas conscious striving is performed in reference to the conceived goal, nonconscious striving would presumably proceed in a more stimulus-driven, bottom-up manner. Gollwitzer, Parks-Stamm, and Oettingen (2008) found evidence for this assumption. In one study, a newly developed goal conflict paradigm was used. Participants performed a very simple classification task. They were asked to indicate by pressing a right or a left button whether a flashed stimulus (i.e., a string of letters) was presented either in the dark-colored area of the computer screen or in the light-colored area (both areas were equally large but intertwined). The classification task goals of being either accurate or fast were either induced outside of conscious awareness (i.e., the letter strings functioned as masks to the subliminally presented words of either "accurate" or "fast") or consciously set (i.e., assigned by the experimenter), resulting in four initial goal conditions. After more than 100 trials, a nonconscious goal of being either accurate or fast was then activated by subliminal priming in the participants of all four conditions while they performed a second set of more than 100 classification trials.

As participants' classification responses showed hardly any errors (i.e., the classification task indeed was easy to perform), their classification response times for the second set of trials were used as the dependent variable of classification performance. When both the first and the second goal activation occurred outside of awareness, the combination of the two goals followed a straightforward additive pattern such that the accurate–accurate combination led to the slowest classification responses, followed by the two conflict conditions (i.e., accurate–fast and fast–accurate), with the fast–fast goal condition resulting in the fastest responses. However, individuals who adopted the first goal explicitly (consciously) failed to show this same summative pattern. They instead evidenced a conflict pattern in response to the second nonconsciously activated goal. The two conflicting combinations (accurate–fast and fast–accurate) resulted in the slowest reaction times, and the two matching combinations (accurate–accurate and fast–fast) resulted in the fastest reaction times.

These findings illustrate that activating goals consciously versus nonconsciously can have a differential impact on subsequent cognitive processing. These findings suggest that conscious and nonconscious goal striving have different processing characteristics, with conscious goal striving resulting in reflective thought guided by the conscious awareness of the goal (or goals) at hand, leading to attempts to integrate conflicting behavioral tendencies, and nonconscious goal striving resulting in more bottom-up reflexive processing that deals with conflicting behavioral tendencies in a summative manner.

Because conscious goal pursuit seems to be driven by top-down processes, with goal striving achieved with reference to the activated goal, Gollwitzer et al. (2008) also hypothesized and tested in a further study that awareness of one's goal should be beneficial to participants when flexibility is needed in terms of switching to a more appropriate means to the goal. Participants were first given a conscious or nonconscious goal to perform well (or no goal at all). They were then confronted with a series of "water jar" problems, a classic task to assess flexibility in problem solving (Luchins, 1942; Luchins & Luchins, 1994). These problems each involved three water jars labeled with volumes (jars A, B, and C); participants were asked to add or subtract the volume of each jar to come up with a given outcome volume (with the volumes changing for each trial). The first eight trials had the same solution (B − A − 2C), the next two trials (i.e., trials 9 and 10) could be solved either by the original formula or by a more simple solution (i.e., A − C or A + C, respectively), and the 11th trial could be solved only by the solution of A − C.

The findings indicated that in the first eight trials, participants in both the conscious and the nonconscious achievement goal conditions were faster to find the correct solution than the control group. Thus, both conscious and nonconscious goals were successful in improving task performance. In trial 9, where an easier solution was also possible (A − C), no differences between groups were observed, as only 8% of the participants discovered this new solution. However, when the results of trial 10 were analyzed, a significantly higher percentage of participants in the conscious goal condition discovered the possible easier