The Confabulated-Self Hypothesis: Is Life Really as Fascinating as Freud Thought It Was?

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ABSTRACT

According to the confabulated-self hypothesis, when people are unaware of the causes of their behavior, they are more likely to rely on their overt behavior in order to infer the causes. Because such self-attrition explanations are often wrong, people form poor self-knowledge. The hypothesis builds on self-perception theory (Bem, 1972) but emphasizes the hidden causes of behavior, especially goals. It suggests that people have a confabulated-self: people confabulate the goals that cause their behavior, and the real goals are left undetected. Supporting the hypothesis, self-attrition research suggests that people confabulate causes for their behavior; and automatic goal pursuit research suggests that goal pursuit often eludes awareness. However, self-attrition research neglected behaviors activated by high-level internal causes (including goals). Additionally, automatic goal pursuit research has not studied when people are unaware of the goal, what kind of goals can be activated automatically, what kind of behaviors can be activated by the goals, whether the behaviors elicit self-attrition, and whether this self-attrition is accurate. Pursuing these questions will not only test the extent of self-confabulation, it will also advance the understanding of self-attrition, automatic goal pursuit, and self-knowledge formation.
INTRODUCTION

Is behavior governed by unconscious processes that often escape self-perception, causing misattribution of behavior to the wrong reasons and contributing to a distorted self-knowledge? This multi-faceted question describes the Confabulated-Self hypothesis (CSH), which is the topic of the current paper. Consider a confirmation of this hypothesis: Yes, behavior is governed by unconscious processes that often escape self-perception. Yes, this leads people to often misattribute their behavior to the wrong reasons. And yes, this creates a substantially distorted self-knowledge. If all these propositions are true, then our inner self is a mystery, and our life is charged with a constant tension between the way we perceive ourselves to be and the way we really are. This possibility tells a radical story about reality: People are driven by forces unknown to them, confabulate narratives to explain their behavior, and are largely in the dark about why they really do what they do.

This fascinating possibility was long the property of schools of thought with questionable scientific merit, such as art, Marxism and psychoanalysis. This paper reviews findings documented under the more scientific approach of social psychology, and ponders whether these findings and the theories that they support suggest that the CSH is indeed true. The discussion echoes others who have looked at similar lines of research and constructed theories and perspectives about unconscious behavior and self-knowledge (Bargh, 1997; Wegner, 2003; and especially Wilson, 2002), though it takes a closer look at the connections between research on self-attribution and automatic goal pursuit. I will systematically review the available findings to determine what parts of these theoretical formulations are still awaiting empirical evidence before they can grow and become more than educated speculations.
As just alluded, I will conclude that there is not enough empirical information, as of yet, to determine whether the CSH is valid. However, in reviewing the relevant findings and theories, I will delineate the empirical paths that could test this hypothesis. I believe that the empirical investigation of the CSH will test some important open questions, which may advance our understanding of self-attribution and the automatic activation of social behavior.

With regard to self-attribution research, I will conclude that this research focused on the self-attribution of behaviors caused by a narrow range of causes: mainly verbal instructions, arousal, and affect. I will suggest investigating how behaviors shaped by other causes affect self-attribution and self-knowledge formation. This paper focuses on automatic goal pursuit, but virtually any field of research in social psychology that examines effects of any factors on human behavior may also teach us more about self-knowledge formation, by investigating how people explain these effects to themselves.

The main conclusions and recommendations in this paper pertain to automatic goal activation. The unanswered question of chief interest is how people explain the behaviors caused by automatic goal pursuit. The answer depends on several other issues that have not been systematically investigated yet, such as the role of awareness in automatic goal pursuit, the type of goals that can be pursued automatically, the type of behaviors that automatic goal pursuit may activate, the self-attribution processes that these behaviors may bring about, and the accuracy of these self-attribution processes.

I will first present the logic that led to the CSH. Next, I explain what missing empirical information must be obtained before one can estimate when self-confabulation occurs and how much of people’s self-knowledge is confabulated. I then turn to a brief review of research and theory on self-attribution, describing what is known and what is yet to be investigated. Then
follows the main focus of this paper: an analytic review of the findings and theory that pertain to automatic goal pursuit. This review focuses on the theoretical and empirical advances needed in order to test the CSH, but, as mentioned, it points to several open questions in automatic goal pursuit research, with implications that go beyond self-attribution. I will conclude with a summary of future research directions.

The Confabulated-Self Hypothesis

The hypothesis links three lines of findings: 1. Social behavior may be activated automatically and without awareness (Bargh, 1990). 2. People often use public stimuli (i.e., their overt behavior) in order to learn about themselves (Bem, 1972); 3. People have poor introspective access to their own mental processes (Nisbett & Wilson, 1977; Wilson, 2002). The hypothesis connects these findings to a model that describes the formation of (inaccurate) self-knowledge: *When a cause of behavior eludes awareness, people are likely to rely on other information, mainly their overt behavior and the circumstances in which the behavior occurred, in order to explain their behavior. Because such self-attribution explanations are often wrong, people form inaccurate self-knowledge* (Figure 1).
Types of Causes of Behavior

In this paper I discuss three distinctions between causes: external/internal, high/low level, goal/goal-less. External causes of behavior pertain to the environment (e.g., a stranger in need), whereas internal causes are in the self (e.g., the goal to help). The self-attribution question is “Why did I do that?”, and both types of causes are valid answers (*because I saw a stranger in need*, or *because I wanted to help*). Causes can also differ in their categorization level (Pieters, Baumgartner, & Allen, 1995; Rifkin, 1985; Rosch, 1978; Vallacher & Wegner, 1987). When asking *Why did I offer money to a stranger in need?* a low-level internal cause would be *I have a motor reflex of reaching to my wallet upon seeing strangers in need*, whereas a higher-level internal cause would be *because I wanted to help*. Internal causes may specify a goal (*I wanted to help*) or not (*I was afraid of the stranger*). These distinctions will become useful when I review theory and research about self-attribution. I will find that that research has neglected goals as the real reasons of behavior, as well as high-level internal causes.
Goal Pursuit Does Not Have to be Unconscious to Elude Self-Attribution

Causes of behavior may elude awareness because they operated unconsciously, because they have been forgotten, or because the causal link between the cause and the behavior was undetected or forgotten. For example, according to the hypothesis, if Jane (a fictitious young woman who will carry my examples in this paper) ponders her generous behavior toward a stranger in need, she would rely on her overt behavior to explain her actions not only if the actual goal (say, impressing her date) has been activated automatically without her awareness, but also if she consciously thought I should impress my date by behaving generously to the stranger, but later forgot having this thought. Further, Jane may even remember having the thought I should impress my date, but may still not be aware of the causal link between the goal and the behavior. In other words, as long as Jane did not have the conscious thought I should help in order to impress my date, or does not remember that thought, she must infer her goal from other information, mainly her overt behavior. The CSH covers all these cases, but this paper focuses mainly on unconsciously activated causes.

The Pursuit/Inference Asymmetry

One reason why Jane might be unaware of her goal to impress her date is that the goal of helping was in fact also activated. That is, behavior can be multidetermined—Jane’s actions might have stemmed from the desire both to help and impress her date. When inferring the causes of their behavior, however, people seem to prefer single causes (Kelley, 1971). In other words, there may be a pursuit/inference asymmetry, such that behavior is often produced by multiple goals, but people are satisfied with one goal as an explanation for their behavior. Thus, if one goal is highly accessible to people, it might obscure the fact that other goals also contributed to the behavior. The pursuit/inference asymmetry is a supporting factor of self-
confabulation, and it may often work in concert with unconscious goal pursuit to hide goals from self-attribution.

*Rules of Attribution*

When people are unaware of the real reasons for their behavior, what determines the content of their confabulations? I suggest that the key determinants are *accessibility, plausibility* and *self-promotion* (APS). Nisbett and Wilson’s (1977) argued that people attribute their behavior to reasons that are *accessible* and *plausible*, and Heider (1958) and Kunda (1990) argued that people also prefer *self-promoting* explanations. That is, Jane is likely to use the most accessible reason for her helping behavior (*The stranger looks much like my grandfather*, if she just heard her mother talk about her grandfather that morning), that is also the most plausible reason (*I only learned that I got a raise after my generous behavior, so this cannot be the reason*), and also the most self-promoting reason (*I couldn’t have done that in order to feel that I am stronger than the stranger in need – that would make me a horrible person*).

It is likely that goals self-attribution is often accurate, because the real reasons for people’s behavior are often accessible, plausible, and self-promoting. People guess correctly that they eat in order to stop feeling hungry, that they spend time with a friend because this friend makes them laugh, that they jog because they want to stay healthy. The CSH posits that there is also a non-minuscule number of goals that are not that easily inferred, or that cause behaviors that are often attributed to other goals. For instance, maybe people also eat because they need oral stimulation, spend time with a friend because this friend makes them feel smarter, and jog to avoid the thoughts that their career choice has disappointed their parents. It is easy to imagine people who are governed by the latter goals but are attributing their behaviors to the former ones.

*What Social Psychology Knows and What is Still Unknown*
Research has shown that social behavior is sometimes activated without awareness, that self-attribution sometimes relies only on overt behavior, and that self-knowledge is sometimes poor. However, we do not know whether self-attribution often follows unconsciously activated goals, whether self-attribution often results in misattribution, and whether poor self-knowledge is the result of frequent misattribution\(^1\). In other words, the causal link between unconscious causes of social behavior, self-attribution, and poor self-knowledge are the hypothetical parts of the CSH. The rest of the paper expands on these missing links, beginning with a review of research on self-attribution.

**SELF-ATTRIBUTION: HOW DO PEOPLE LEARN ABOUT THEMSELVES?**

Self-attribution is any process that involves attributing a response to a cause that resides within the self. The self-attribution process asks what it is about me that made me generate this response. For instance, on observing the knee reflex, Jane might infer that she possesses an automatic reflex that makes her knee jerk, when lightly tapped on a certain location of the leg. A more idiosyncratic example will be attributing her succinct responses to questions in class to her shyness. The common types of responses that are usually perceived as originating from the self are behavior, autonomic bodily sensations (feelings), and thoughts. Therefore, these are the prevalent responses that are subjected to self-attribution. In the following sections I review evidence from research on self-attribution of each of these response types, and discuss whether the evidence is consistent with the CSH.

\(^1\) The present paper does not offer much discussion on the relationship between self-attribution and self-knowledge. I assume that self-attribution is one source of information that shapes self-knowledge, but there are also other sources, such as what other people (parents, significant others, therapists) tell us that we are. The effects of each source of information and the interaction between these sources on self-knowledge formation are open questions, not discussed here.
Self-Attribution of Behavior

Self-Attribution of behavior was studied mainly under the frameworks of cognitive dissonance and self-perception theory. I present both approaches and review the relevant effects covered by these lines of research.

Cognitive Dissonance and Insufficient Justification

One of the early research areas that demonstrated the malleability of self-knowledge was cognitive dissonance. This research has shown that a conflict between behavior and a belief or a conflict between two beliefs may lead to the formation of a new belief aimed at resolving the conflict. Cognitive dissonance theories describe what happens when such conflict occurs, and when this conflict would indeed result in a change of beliefs (Aronson, 1968; Festinger 1964; Olson & Stone, 2005; Wicklund & Brehm, 1976).

If the new belief pertains to the self, then the process of dissonance reduction changes self-knowledge. To examine whether this involves self-attribution, consider Festinger and Carlsmith’s classic experiment (1959). Participants changed their attitude about a task they just completed from boring to enjoyable in order to justify the fact that they told the next participant that it was an enjoyable task and were paid only $1 for doing so (Figure 2). Cognitive dissonance involves self-attribution because a possible explanation of the self’s behavior causes the dissonance, and a new self-attribution reduces it. For instance, the behavior of telling the other participant that the task is enjoyable is the information that serves as input for the self-attribution process. Because people have the motivation to reduce the dissonance, they attribute their behavior to their enjoyment of the task, rather than to being a liar.
Importantly, the reason for the participants’ behavior was the experimenter’s request (forced compliance, Olson & Stone, 2005). A subtle request by the experimenter was the manipulation in virtually all cognitive dissonance studies of insufficient justification. Researchers knew that subtlety was important because participants had to believe that they executed the conflicting behavior of their own free will, or else a feeling of dissonance could not emerge (Brehm & Cohen, 1962; Zimbardo, 1969). In other words, the actual cause of behavior had to be hidden from the participants in order to allow for a change in cognition to occur. This suggests that indeed, self-attribution processes were in the core of cognitive dissonance effects (Ross, 1977, p. 185).

*Self-Perception Interpretation for the Insufficient Justification.*

Taking this idea even further, Bem (1967) stripped the cognitive dissonance theories of their motivational aspect, and focused only on self-attribution. In Bem’s formulation of cognitive
dissonance effects, people were not motivated to change their cognition because of their conflicting behavior; instead, they formed the cognition as a rational explanation of the behavior (Figure 3). Bem showed that even observers who read about a person telling other participants that the task was enjoyable after being paid $1 drew the same conclusions as did the participants who experienced that in the original study: They assumed that the participant enjoyed the task more than did observers who read about participants in the $20 condition. Bem argued that the observers had no motivation to reduce the dissonance, and still they reached the same conclusions as participants who, presumably, had this motivation. With this manipulation Bem demonstrated the important role of self-attribution in the cognitive dissonance effects.

*Figure 3: Self-Perception Theory Account for Insufficient Justification*

Building on this logic, Bem (1972) developed self-perception theory, relying heavily on the work of two behaviorist thinkers: B. F. Skinner (1945, 1953, 1957) and Gilbert Ryle (1949). Self-perception theory posits that people do not have direct information about their internal states, and therefore they use other information to infer those. When internal cues do not suffice, they use external cues such as overt behavior. When overt behavior is the source of information,
people’s inferences follow the general rules of attribution (e.g., those proposed by Jones & Davis, 1965; Kelley, 1967).

**Counterattitudinal Essay Writing**

Research on cognitive dissonance often measured attitudes as the dependent variable, demonstrating attitude change in the service of dissonance reduction (Olson & Stone, 2005). One such paradigm, a special case of insufficient justification, is the counterattitudinal essay writing procedure (Cohen, 1962; Linder, Cooper & Jones, 1967). In this paradigm, participants are requested to write arguments favoring an opinion that they did not support. If the request is done subtly, and is not perceived as forced, the participants (unless they have external justification such as monetary reward) come to believe that they do not oppose that opinion as much, given that they just wrote a few arguments supporting it.

Studies like these provide evidence that self-knowledge about attitudes is highly malleable, which is consistent with the confabulated-self hypothesis. However, the cognitive dissonance perspective focused on the role of the feeling of discomfort and the motivation to reduce dissonance. Only the reformulation of these findings according to the self-perception theory highlights the role of self-attribution. Kiesler, Nisbett and Zanna (1969) showed that even when participants are asked to behave in a way that supports a cause that they do not oppose (which should not cause discomfort and not motivate them to justify the behavior), they tend to believe in that cause more than participants who were not asked to perform any action that supports that attitude. As Figure 4 illustrates, this also provides clear support to the confabulated-self hypothesis.
Overjustification

In Festinger and Carlsmith’s experiment, the $20 participants had sufficient justification for their behavior. After all, in 1959, $20 was the same as $140 in 2007. Therefore, participants did not have to search for any additional reason why they told the next participant that the task was enjoyable. But what if the task was in fact enjoyable? Would the $20 participants fail to perceive that they performed the task because they enjoyed it, compared to the $1 participants? Research on overjustification suggests that this assumption is viable (Deci, 1971; Lepper, Greene, & Nisbett, 1973; Ross, 1975). This research showed that people who were rewarded for performing an enjoyable task were less likely to perform this task again out of their own free will, in comparison to people who received smaller or no reward for the same action. This suggests that these participants perceived this performance as less enjoyable than participants who did not receive large reward to perform the same task.

According to self-perception theory, because the reward accounted for the behavior, people had less evidence (in comparison to small reward participants) that they enjoyed the task (Nisbett
In self-confabulation terms (see Figure 5, left panel), the hidden reason of behavior is the enjoyment, and the decoy reason is the reward. That is true only if the reward can be considered to be a decoy, instead of an additional reason for behavior, because people would perform the behavior even if the reward were not present. However, when reward is promised, it becomes the goal in addition to enjoyment (Figure 5, right panel). That is, although the reward was not necessary to motivate the behavior, once it is present it might become an actual goal that people pursue. As a result, people may still have the same goal to enjoy, but they underestimate its importance—possibly because of the previously-mentioned tendency for people to attribute their behavior to a single goal (Kelley, 1971).

Figure 5: two accounts for overjustification: self-confabulation (left) and goal shift (right)

Pain Perception

Self-perception theory also accounts for studies that examined people’s inferences from behavior to bodily states. One of the first demonstrations examined inferences about the amount of pain that one feels (Bandler, Madaras & Bem, 1968). Participants in this study experienced a series of shocks, of different levels of objective severity, administrated one after another. Because the shocks varied in their objective severity, participants were given the option to press a button whenever the shock was too painful. In one condition the experimenter told the
participants that she would really prefer it if they pressed the button often. Participants followed the instructions, and as a result rated the pain inflicted by these shocks as more severe than the pain inflicted by the same shocks, administrated in a different condition (one in which participants were instructed explicitly rather than subtly, to escape the shock in all trials). These results were interpreted as support for the self-perception theory. When participants perceived their escape behavior as occurring out of their own free will, they attributed this behavior to the pain inflicted by the shock, and therefore rated the pain as more severe.

This finding can be construed as a support of the confabulated-self hypothesis (Figure 6). The experimenter’s request causes the escape behavior. The pain activated the goal to escape the shock. However, when participants attributed their behavior back to the goals, they underestimated the weight of the experimenter’s request and overestimated the weight of the goal to escape the pain.

*Figure 6: From Cause to Confabulation – pain perception (Bandler, Madaras & Bem, 1968)*
Foot-in-the-Door

When asked a small request first, people are more likely to agree to a larger request later, in comparison to people who were not asked the small request first. This known truism, used even in Korean brainwash tactics (Schcin, Schneier & Barker, 1961), was demonstrated empirically by Freedman and Fraser (1966). In a phone survey, a group of housewives first agreed to answer a short questionnaire on the phone. Three days later, these housewives were more likely than housewives who were not asked this question at all, to agree to a second, larger, request, and let a group of researchers into their house for a 2 hour survey and a thorough inspection of the brands that can be found in the house.

Freedman and Fraser (1966) suggested that the reason for this effect is that once agreeing to a request a person might become, in her own eyes, the kind of person “who does this sort of thing, who agrees to requests made by strangers, who takes actions […] who cooperates with good causes” (Freedman & Fraser, 1966, p. 201). Therefore, the foot-in-the-door effect was often studied as a test of self-perception theory. Interestingly, almost 30 years of research on this effect failed to prove (or even test) that self-perception indeed mediated the compliance effect (Beaman, Cole, Preston, Klentz, & Steblay, 1983; DeJong, 1979; Dillard, Hunter, & Burgoon, 1984; Fern, Monroe, & Avila, 1986). Finally, Gorassini and Olson (1995) investigated this question systematically in two experiments that found the same results: agreeing to the small request increased both participants’ compliance to the larger requests and their self-reported helpfulness. However, these two measures did not correlate, and were affected differently by moderating variables. In other words, the effects of the manipulation on self-perception and on compliance were not related causally.
In terms of self-confabulation, only the effect of the manipulation on self-perception is relevant. A self-confabulation process occurred if people agreed to the small request out of compliance or any other reason not related to the goal to help, but then attributed their behavior to a helping goal, thus forming the self-knowledge that they are helpful (Figure 7, left panel). However, it is unclear whether helpfulness was confabulated. It might be the case that the small request was an opportunity for people to learn that they have helping tendencies, or that it made them understand that they like helping, considering the pleasant feeling that helping brought about (Figure 7, right panel). This illustrates the main difference between self-perception theory and the confabulated-self hypothesis. The latter focuses not only on the self-attribution process, but also on the actual reason that that caused the behavior.

Figure 7: Foot-in-the-Door: Confabulation (Left), Revelation (Right).

Explaining Behaviors with Unknown Causes

Next, I review three lines of research that demonstrated the ease with which people provide self-attribution explanations for effects with unconscious causes. These studies support
the assumption that people do not need to remember or consciously witness the correct reason in order to provide a self-explanation that they judge as correct.

*Explaining the Effects of Unconscious Processes*

In the studies reviewed so far, self-attribution was usually the mechanism but not the dependent measure. That is, participants were not asked for their explanation of the behavior that was induced. Instead, researchers inferred from participants’ responses that they must have inferred their internal states from observations of their behavior. Nisbett and Wilson (1977) reported several informal observations of researchers who reported that these self-attribution effects, like many other effects studied by psychologists, might happen without awareness. Noting people’s inability to access many psychological processes, Nisbett and Wilson turned to examine self-reported self-attributions, and conducted a series of studies in which self-reported attribution was the dependent variable.

Maybe the most relevant of all to the CSH, Nisbett and Wilson (1977) found that people were unable to report the following effects on their own behaviors: the effect of semantic priming on word generation (termed *semantic cuing*; e.g., memorizing the words moon-ocean, facilitated the generation of the word tide); the effect of garment position in an array of garments on preference for that garment; the effect of anchoring on prediction (hearing about one random behavior when asked to predict the average behavior); and the effect of a target person’s warmth on judging other attributes of that person. In other studies, participants reported that several factors had influenced their behavior, whereas in reality these factors had no detectable effect: the null effect of literary passages on reported emotional impact; the null effect of sound and picture quality of a sad film on their reaction to the film; and finally, the null effect of a reassurance message before starting a study with shocks on the self-predicted amount of shock.
that they would take. These findings support the CSH. They showed that people are often unaware of the processes that affect their judgments, yet they readily confabulate reasons to explain them (though this should be qualified with the note that in most studies participants did not have the option to respond *I do not know*).

Nisbett and Wilson’s work is related more to research on unconscious social behavior than to self-perception research. Like the later studies of automaticity, they induced effects that participants could not report. The self-attribution queries resembled the awareness tests used in the automatic social behavior research that followed. They showed that people were unaware of their behavior but unlike past self-perception research, they did not show that participants, even without being prompted, learn from their behavior and use the behavior as information that may revise self-knowledge.

**Explaining Behavior Caused by “Another Self”**

More evidence that people confabulate comes from research in which people could not have any access to their mental processes because of brain damage. A few case-studies (Gazzaniga and Ledoux, 1978; Gazzaniga, 1985) focused on patients who underwent split-brain surgery to relieve the symptoms of brain diseases, such as epilepsy. In this procedure, the corpus callosum is sectioned, disconnecting any direct communication between the left and the right hemispheres. As a result, stimuli that are perceived by only one half of the brain are subjected only to the processes that can be performed by this half alone. For instance, when only the right half-brain observes a picture, the patient cannot name the object in the picture because language typically resides in the left half of the brain. In a minority of split-brain cases, the right hemisphere can comprehend language and follow commands. However, even in those cases, the right hemisphere cannot produce language. Therefore, when the word *walk* was flashed to the
mute right half-brain, these patients responded by starting to leave the testing area, but could not report that the instructions to walk preceded their action. Yet, when asked why they are leaving the room, the verbal left-brain usually provided explanation promptly and without hesitation (e.g., I’m going to get a Coke). This is a demonstration of the full path predicted by CSH, from an unconscious cause of behavior to a confabulated internal cause of that behavior. However, it is limited to a very small and special population.

Explaining the Wrong Behavior

A third line of research that demonstrated the ease by which people generate explanations for their behavior, even when they do not have the correct information, is the choice blind paradigm (Johansson, Hall, Sikstrom & Olsson, 2005). In that research, healthy participants were requested to indicate quickly which woman in a pair of photographs was more attractive. Pairs were shown quickly, and sometimes participants were asked to explain their choice. In some of the trials, the skilled experimenter tricked the participants into believing that their choice was opposite to their real response. Nevertheless, participants provided similar explanations of why they chose the picture they really preferred and why they “chose” the picture they had not really preferred. In other words, the researchers could not find any difference between participants’ explanation of their real preference and their false preferences. This is another clever demonstration of the independence of behavior and explanations for it. It suggests that people have limited access to the mental processes that actually cause their preferences, and thus must feed on observations of their behavior as input.
Self-Attribution of Feelings

Here I focus on two types of feeling that serve as input for self-attribution: arousal and affect.

Self-Attribution of Arousal

Nisbett and Valins (1972) noted that an obvious addition to Bem’s basic self-perception proposition about overt behavior is that people also infer internal states from their autonomic activity. As Bem himself noted (1972), this was demonstrated even before he formulated his theory, in Schachter and Singer’s classic experiment (1962). In that study, participants in the experimental group felt arousal because they were injected with epinephrine. However, some of them were not told that their arousal was caused by the injection. These participants showed more emotionality, presumably because they attributed their arousal to their emotional state rather than to the injection. In a conceptual replication, participants who were aroused because of electric shocks were led to believe that the arousal was caused by a placebo pill, and therefore tolerated four times the shock tolerated by the control participants (Nisbett & Schachter, 1966).

Others have shown that arousal can be misattributed to sexual attraction (Dutton & Aron, 1974; Cantor, Zillman & Bryant, 1975; White, Fishbein & Rutsein, 1981), to lack of confidence (Savitsky, Medvec, Charlton & Gilovich, 1998) and distress (Fries & Frey, 1980). All these findings provide strong support to the CSH because hidden reasons (e.g., the effect of the epinephrine) caused an observable reaction (arousal) that was then misattributed to other reasons, forming self-knowledge (e.g., I’m angry).
Self-Attribution of Affect

People also use their current affect to infer their attitudes. The experience of positive affect\(^2\) upon perceiving an attitude object (say, apple) is often inferred as evidence that one likes this object (Clore, Gasper & Gravin, 2001; Wyer & Carlston, 1979, p. 192). To demonstrate the role of affect in self-attribution, one must manipulate affect and show that participants in the different experimental condition have different attitudes toward the same object as a result of the affect manipulation. In other words, the most compelling evidence that people use affect to learn about their attitudes is found in affect misattribution effects.

For example, Schwarz and Clore (1983) showed that the positive affect engendered by the first days of spring can be misattributed to general life satisfaction, informing people that they are satisfied in their life. Schwarz and Clore showed that it was the product of misattribution because when a question about the weather preceded the general life satisfaction question, it provided participants with the real source of their feelings, and the effect of sunny days on general life satisfaction disappeared. This finding is rather abstract in terms of the actual information that is being misattributed. The information might have been positive bodily sensations, but also pleasant thoughts engendered by the pleasant weather.

A lower level of affect misattribution might account for the evaluative conditioning effect (De Houwer, 2007; De Houwer, Baeyens & Field, 2005). This effect happens when positive or negative stimuli are systematically presented in a temporal proximity to neutral stimuli (e.g., Levey & Martin, 1975; Staats & Staats, 1957; Olson & Fazio, 2003). As a result, people report liking stimuli that were paired with positive stimuli and disliking stimuli paired with negative stimuli. One of the prominent explanations is affect misattribution (Baeyens, Eelen, Crombez &

\(^2\) It is not easy to determine whether an experience of positive affect means a thought or a bodily sensation, so in affect I mean core affect as defined by Russell (2003): A neurophysiological state that has the effects known to us as affective
Van den Bergh, 1992; Baeyends, Eelen & Crombez, 1995; Baeyens & De Houwer, 1995),
namely that because of the temporal proximity, the affect that is activated by the valenced stimuli
is misattributed to neutral stimuli.

Affect self-attribution fits the model of self-confabulation (see Figure 8). A stimulus causes
a reaction without calling attention to itself. Therefore its effect on the self happens without
awareness. The person then attributes her reaction to another decoy stimulus, inferring that she
likes or dislikes the decoy stimulus. As seen in Figure 8, affect misattribution does not
necessarily include goals (though the US may be liked or disliked because of goals, Ferguson &
Bargh, 2004), but the internal cause can be construed as high-level reason: liking of the US. This
may suggest a reality similar to the one described by the CSH: people think that they like many
targets (e.g., their favorite soda, their spouse’s best friend, a pop song) because of their good
qualities (e.g., taste, sense of humor, ingenious melody), while in fact they like those targets only
because they happened to be presented a few times with other positive targets (e.g., an attractive
model, a pleasant aftershave scent, an appealing music video).

*Figure 8: Affect misattribution in evaluative conditioning*


**Self-Attribution of Thoughts**

Self-attribution research focused on explaining one’s own behavior, and affect misattribution research focused on explaining one’s feelings. However, people do not only perceive their behavior and feelings, they also witness at least some of their own thoughts. It is reasonable to assume that in some of the effects reviewed thus far, the information that was explained by the participants also included thoughts. For instance, in the counterattitudinal essay writing procedure, people think before they write, and coming up with arguments to support an opinion once opposed can make one think that maybe she does not oppose the opinion as much as she thought before. Similarly, it is reasonable to believe that mood effects are accompanied by happy thoughts such as “I feel so good,” that can then be attributed to specific objects.

Thoughts about one’s preferences can also feed further self-attribution. For instance, thoughts such as *I like apples* may serve further as information for self-attribution processes about whether one likes fruits. If the thought *I like apples* comes to mind because an apple tastes good, and then the person infers *I like apples because I like healthy food*, this may be an inaccurate inference, if that person does not like healthy food, only tasty food. In other words, people may verbalize their preferences but fail to attribute them to the correct superordinate attitudes, and therefore confabulate the wrong superordinate attitudes (Figure 9). There is some research about the perception of thoughts and feelings as more diagnostic information for self-attribution (Andersen & Ross, 1984). Additionally, cognitive attention to certain topics, when trying not to think of them, has been shown to inform people about their interests and needs (Liberman & Forster, 2000). Other than that, I am unaware of research that studied how people explain the content of their thoughts and the effect of these explanations on self-knowledge.
Figure 9: Self-attribution of thoughts, proposed model

**Self Attribution – Summary**

Research and theory on situational self-attribution is generally consistent with the CSH. In this research, the reason for a response is unidentified by its perpetrator, and the response is then attributed to another reason. It clearly demonstrates that people do not have to remember an instance of intentionally deciding to perform a behavior in order to explain, in retrospect, what caused the behavior. However, this literature does not focus on the actual reasons for behavior. Therefore, the reasons for behavior in the studies were limited to verbal instructions, arousal, and affect. Of these, only compliance to the instructions can be construed as a goal, maybe in the service of enabling smooth social interaction, or even higher goals such as achievement or social affiliation.

This highlights the difference between self-perception theory and the CSH. Self-Perception focuses on how people learn about their own internal states, whereas the CSH adds to that the assumption that the real reasons for behavior often elude awareness and self-knowledge. Formally, the premise of self-perception theory includes the CSH, because it refers to all types of
causes of behavior (rather than only external causes). However, research and thinking about self-perception theory focused on external causes, and neglected high-level internal causes, and especially goals. The CSH contends that even behavior that is caused by high-level internal causes such as goals is explained through self-perception. Because the causal link between goal activation and behavior often eludes awareness, the explanation is often inaccurate.

The potential importance of the CSH stems from the presumed prevalence of high-level internal causes that elude awareness, and from the theoretical importance of goals. Goals are convenient theoretical constructs, superordinate to behaviors, and human behavior is often believed to be organized by them (Ach, 1935; Austin & Vancouver, 2006; Dewey, 1897, Lewin, 1935; McDougal, 1931). Therefore, I think that investigating the effect of goal pursuit on self-attribution would have a large contribution to the understanding of self-knowledge formation.

**AUTOMATIC GOAL PURSUIT**

*Unconscious Internal Causes of Behavior*

Self-attribution taught us that people confabulate high level reasons such as goals and behavioral tendencies to explain their behavior, feelings and thoughts. As just mentioned, the confabulated-self hypothesis adds the assumption that the real causes of behavior, hidden from people’s self-attribution, are also goals and behavioral tendencies of the same construal level. This assumption was not investigated in the high days of self-attribution research, perhaps because back then unconscious processes were not as widely accepted, documented and studied as today. A strong validation of the CSH requires the documentation of a large number of internal causes that escape people’s awareness, perhaps ones that occur frequently in everyday life.
Notably, though the unconscious gained scientific interest and respect only after the 1980s, one program of research, at least as old as the study of self-attribution, assumed unconscious psychological constructs, focusing on implicit motives (McClelland, Atkinson, Clark, & Lowell, 1953; McClelland, 1985; Schultheiss, in press), contending and finding that these motivations are different than people’s self-reported motivations (McClelland, Koestner & Weinberger, 1989). Implicit motives are motivational dispositions that operate outside of a person's conscious awareness and are aimed at the attainment of specific classes of incentives and the avoidance of specific classes of disincentives (Schultheiss, in press). Motives are not goals. Motive is the degree to which a person wants to attain a goal, not taking into account the external rewards that attaining this goal would bring (as opposed to the internal reward of the state “goal attained”) and the probability to attain the goal (expectancy). Motives are personality constructs, like tendencies, measured with a projective test, the Picture Story Exercise (PSE, McClelland et. al, 1989; Schultheiss & Pang, 2007). In this literature motives are conceived of as traits rather than temporary states that can be primed. Usually, they are not linked to choice and judgment, only to the actual performance in tasks that offer the attainment of goals related to the motive (Bornstein, 2002; Schultheiss, in press). Interestingly, people often fail to report their motives (McClelland et. al, 1989), maybe because they cannot distinguish between external rewards, internal reward and expectancy to attain the goal.

With respect to the CSH, motives can be construed as unconscious internal causes of behavioral tendencies. They might offer a possible path to the discovery of a confabulated-self because people’s self-reports are often unrelated to their measured motives. However, it is difficult to activate motives experimentally. For that reason, I will focus on a field of research
that, at least on a first glance, seems more promising. This field of research is automatic goal pursuit.

Research on automatic goal pursuit assumes that high-level internal causes can be activated without people’s awareness and elicit goal pursuit behavior. If people are indeed unaware of the activated goal and confabulate other goals to explain their behavior, this will provide a confirmation of the CSH. To examine this possibility in depth, in the next section I discuss research on automatic goal pursuit and examine whether it generates behaviors prone to self-(mis)attribution and self-knowledge confabulation.

**Automaticity**

The concept automaticity is so widely used in experimental psychology that there is no one definition of the term (Moors & De Houwer, 2006). It is an attribute of behavior related to perception (being affected by stimuli that were not consciously perceived, Debner & Jacoby, 1994), memory (remembering without intention, Jacoby, 1991), learning (implicit learning, Reber, 1967, 1989, 1993), emotion (e.g., the speed and effortless of emotional processing, Zajonc, 1980; Barrett, Ochsner & Gross, 2007; Morris, Ohman, & Dolan, 1998), and social cognition (Bargh & Ferguson, 2000; Bargh & Williams, 2006; Bargh, 2006; Wenger & Bargh, 1998). To define automaticity, Bargh (1994) proposed four distinct aspects: efficiency and the lack of awareness, intentionality, and control. In automatic behavior, one, some or all of these aspects are present. For confabulation, lack of awareness is the most important aspect because it enables misattribution. To understand whether automatic activation of social behavior implies unconscious internal causes for behavior, this section starts with describing the basic effect and the several mechanisms that were proposed to explain the effect.
Bargh (2006) dates automaticity research in social psychology to research on social perception (Higgins, Rholes & Jones, 1977; Srull & Wyer, 1979). These studies demonstrated the role of accessibility in forming impressions about target people. The manipulation of accessibility was called priming, which was manipulated either by exposing people to traits in an earlier ostensibly unrelated task (Higgins et. al, 1977), or to a few instances of behavior that convey similar traits (Srull & Wyer, 1979). The results were the same: people tended to use these traits when they later formed an impression of the target people.

The basic finding in automaticity research in social psychology is that the activation of concepts increases the likelihood of engaging in behaviors or thinking thoughts related to those concepts. The effect of accessibility on thoughts is not surprising because it does not seem much different than the phenomenon of semantic priming, a well documented effect in cognitive psychology (Neely, 1977). If the word doctor increases the accessibility of the word nurse, then it seems reasonable that people who were just primed with behaviors that activate the trait generosity, would be more likely to think of other concepts related to generosity, and use this trait when they try to judge a new target person.

A slightly more surprising effect is that of priming on motor behavior. Unscrambling 30 sentences containing 17 concepts related to old age made people more likely to walk slowly (Bargh, Chen & Burrows, 1996). In this case, the priming of a concept was somehow translated to the enactment of a behavior, implying an automatic link between semantic activation and motor behavior.

Another form of automatic social cognition is the automatic activation of goal pursuit (Bargh et. al, 2001; Dijksterhuis, Aarts, & Smith, 2005). Several studies have found that a specific goal can be primed and influence people’s behavior with minimal awareness that the goal or other
mental constructs have been activated (Aarts, Gollwitzer, & Hassin, 2004; Bargh et. al, 2001; Hassin et. al, in press). In a typical study in this area (Bargh et. al, 2001), participants solved a word-search puzzle that included a few words related to cooperation (e.g., helpful, support). Then, as part of what they believed was an unrelated study, participants played a shared-resources game in which they took the role of a fisherman who could either choose a cooperative strategy (return fish to the lake, so the fish could multiply and help all fishermen) or a competitive strategy (keep the fish). Compared to participants in a control condition, those who received the cooperation words were more likely to share their resources (the fish) with the other fishermen, but were unaware that the word search puzzle had anything to do with their behavior. This finding has been replicated using a variety of priming methods (e.g., subliminally presented words, scrambled sentence tasks, word search puzzles, paragraphs that describe someone else’s behavior), that activated a variety of goals (e.g., affiliation, achievement, impression formation, earning money) that influenced a range of behaviors (e.g., trying to win a ticket to a party, clustering information, putting effort into puzzles, exerting cognitive control, competing for monetary prizes; Aarts, Custers & Holland, 2007; Aarts, Gollwitzer & Hassin, 2004; Bargh et. al, 2001; Chartrand & Bargh, 1996; Hassin, Bargh, & Zimerman, in press).

How Does Priming Work?

The link between semantic stimuli and cognitive and behavioral output cannot surprise the reader. The reader is doing just that: thinking in response to semantic stimuli. Additionally, the instructive message *scratch your forehead* can elicit the behavior it describes without causing anyone to document the effect and submit it to publication. However, scrambled sentences do not have the same semantic meaning as verbal instructions, and when people follow instructions they experience free will and are aware of their behavior. It is the lack of awareness and the
semantic difference between priming manipulations and verbal instructions that make priming a special phenomenon that deserves theoretical explanation.

I believe that the account for unconscious activation of behavior is simple: behavior without awareness is just like behavior with awareness only without awareness. That is, most of the processes that lead from the perception of the word help and pursuing a helping goal operate regardless of whether the word help is perceived consciously or unconsciously. The difference between unconscious and conscious behavior can be traced to a few processes that require short-term memory and therefore elicit awareness. I suspect that these processes are not required for the activation of internal causes of behavior. Therefore, I contend that in the automatic activation of social behavior, internal causes are activated without awareness. The current accounts for automatic activation of social behavior support this contention.

Accounts for Automatic Social Behavior

The Perception-Behavior account (Dijksterhuis & Bargh, 2001) assumes a spread of activation from perceiving a stimulus to initiating a behavior associated with that stimulus. Half of this route, the ideomotor principle, was delineated in the 19th century (Carpenter, 1893; James, 1890/1950), namely the assumption that ideas (i.e., thoughts) inevitably translate to actions unless inhibited. The perception-behavior model adds the perceptual component, arguing that, like ideas, perceptual stimuli also inevitably translate to actions unless inhibited.

To explain automatic goal pursuit, in his Auto-Motive Model, Bargh (1990) broadened the assumption to an automatic link between environmental cues and mental representations, including the mental representation of goals. The activation of goals’ mental representations can cause plans or procedures and these can cause behavior. Importantly, according to the auto-
motive model, all the links in this process, other than the overt behavior, are assumed to operate without awareness.

According to the *Social Functional Perspective* (Kawakami, Dovidio & Dijksterhuis, 2003; Chartrand, Maddux, & Lakin, 2005; Cesario, Plaks & Higgins, 2006), people automatically change their attitudes and behavior to better facilitate social interaction (social tuning, Lowery, Hardin & Sinclair, 2001). Kawakami, Dovidio and Dijksterhuis (2003) showed that when primed with a social category, people may automatically change their attitudes and behavior to better match the stereotypic behavior of this category. Lakin and Chartrand (2003) showed that social affiliation goals facilitate mimicry as means to increase the smoothness of the social interaction (Lakin & Chartrand, 2003). Support to this notion comes also from automatic complimentary behavior, in which submissive verbal behavior is automatically activated by dominating nonverbal behavior and vice versa (Tiedens & Fragale, 2003). Similar findings about priming effects were documented by Cesario, Plaks and Higgins (2006). They showed that the effect of social category priming depends on people’s attitudes toward the primed category. For instance, only people who liked elderly people walked more slowly if primed with elderly people, presumably, because only they were motivated to facilitate a social interaction with elderly people.

According the *Active-Self* account (Wheeler, DeMarree, & Petty, 2007), priming is often the result of activating an aspect in the self-concept. For example, when the concept *competition* becomes accessible, people who have a competitive self will push forward that side of them and behave more competitively. Consistent with this account, Demarree, Wheeler, and Petty (2005) showed that priming affected people’s behavior more if they were low self-monitors – people
who are more influenced by their self-concept than by the influence of the social pressure such as conformity.

Focusing on automatic goal pursuit, Custers and Aarts (2005a) suggested three factors that control this effect. According to their account, automatic goal pursuit is more likely to occur if (1) the goal is accessible, (2) the goal is associated with positive valence, and (3) there is a discrepancy between the current state and the end-state representing the attainment of the goal.

Empirical findings confirmed that positive valenced goals are pursued automatically (Custers & Aarts, 2005b), whereas negative valenced goals are not pursued, despite their accessibility (Custers, Aarts & Holland, 2007). It was also found that actions related to the primed goals were more accessible if goal-discrepant situations were also primed, than if the primed situations were not goal-discrepant (Custers & Aarts, 2007). To explain the automatic activation of goal pursuit (when the three conditions are met), Custers and Aarts did not diverge from Bargh’s auto-motive model.

*All Accounts Support Unconscious Internal Causes*

All explanations of priming effects accept the basic premise of the auto-motive model: perception activates cognitive constructs that elicit behaviors related to those constructs. Each of the other models adds qualifications that predict when priming is more likely to occur: if it facilitates social interaction, if it is consistent with a self-concept, and if it activates a goal that is positively valenced and has not yet been attained. In other words, all the accounts agree that priming happens because stimuli automatically activate mental representations of either the behavior (perception-behavior link), or mental constructs that are associated with the behavior (goals or a self-concept). Some assume that this activation leads to related behavior only if certain conditions are met (the behavior promotes social affiliation, or the goal is desired and not
attained yet). Most central to the current context, all these accounts suggest that automatic goal pursuit involves the activation of high-level internal causes (i.e., it actually activates goals unconsciously), consistent with the CSH.

*Goal Priming or Behavior Priming?*

Research and thinking about automatic social behavior has struggled with the distinction between automatic behavior activation and automatic goals activation. It is difficult to determine that a behavior is goal directed (Forster, Liberman & Friedman, 2007). For instance, walking slowly after the concept of elderly people becomes accessible may be construed as a behavior aimed at facilitating interaction with elderly people (Cesario, Parks & Higgins, 2006), but it may also be a non-goal directed behavior, adopted only because it is accessible. Even if the primed concepts are goals, such as competition (Kay & Ross, 2003), helping (Dik & Aarts, 2006) or looking well groomed (Custers & Aarts, 2007), it is possible that these concepts activated behavior associated with the goal, but not an actual goal pursuit, aimed at attaining the goal.

To help resolve that question, Forster, Liberman and Friedman (2007) listed 7 principles that define goal pursuit and should characterize automatic behavior if it is goal directed. Goal pursuit is implicated when (1) the end-state is positively valued, and when the resulting behavior (2) decreases after attaining the goal, (3) increases when there is a discrepancy from the end-state and (4) the end state is desirable; (5), behaviors that facilitate conflicting goals are inhibited (6) and more generally activate self-control; and (7) the behavior can be easily replaced or accompanied by other behaviors that serve the same goal. Forster et. al (2007) emphasized that their principles are sufficient but not necessary for inferring primed goals. That is, the more principles are met, the more likely that it is goal pursuit, but if not all of them are met, it does not mean that it is not a goal pursuit.
Some automatic goal pursuit studies have successfully met some of the principles described above (Bargh et. al, 2001; Aarts, Hassin & Gollwitzer, 2004; Custers & Aarts, 2005). Perhaps the most convincing evidence comes from Aarts’ use of what he calls the mouse-click task (Aarts, Gollwitzer & Hassin, 2004; Aarts et. al, 2005; Custers & Aarts, 2005; Custers & Aarts, 2007). In several of his studies, after a goal was primed, its effect was not tested by measuring a behavior that could have been activated directly without goal pursuit. Instead, it was a neutral behavior – a game in which participants are asked to use the computer mouse to click on targets appearing on the screen. This task received the goal-facilitating value only because of the context of the study. Participants in this type of experiment learn that they may have the opportunity to engage in a behavior that can facilitate the primed goal (e.g., winning a free ticket for a party, when the primed goal was socializing, Custers & Aarts, 2007). However, this will happen only if they finish the mouse-click task quickly enough. The measure for the primed goal, then, is the speed by which participants finish the task. The logic is that the behavior of quickly clicking on the targets on the screen has nothing to do with the primed goal, yet it is affected by the priming, because the primed process was a goal pursuit and not only behavior. In conclusion, the methods used to automatically activate goals have been proven to indeed activate goal pursuit, rather than only related behaviors.

Does Automatic Goal Pursuit Cause Self-Confabulation?

So far, I have presented examples and theories about automatic social behavior, and argued that these support the notion that automatic goal pursuit is a behavior with internal causes that might be hidden from the executer of this behavior. The present section examines whether this may lead to inaccurate self-attribution. The questions are (1) whether people are unaware of the
goal pursuit, (2) whether the behavior elicits self-attribution processes, and (3) whether these self-attribution processes are prone to mistakes.

To examine these questions, I reviewed all the published studies that used priming to induce automatic goal pursuit. For each study, I documented (1) the goal that was primed, (2) the behavior that was affected, and, if reported, (3) the awareness to the goal pursuit. Using this information, I generated hypothesis about the kinds of self-attribution processes each behavior might trigger, and whether self-attribution is likely to trace the behavior to the primed goal.

To find the relevant papers, I conducted a literature search to identify studies published from 1996 through March 2008 that used a priming manipulation with the stated purpose to activate a goal. I also included studies that might have primed an end-state that caused automatic goal pursuit, even if the researchers did not explicitly make that claim. First, academic search engines (e.g., PsycINFO) were used. The key words used for searching included goals, automatic, goal-pursuit, and unconscious. Second, studies identified via the search engines were used to guide further literature searches. For example, I consulted their reference lists for relevant articles. Third, I conducted an electronic search with Web of Science index and Google Scholar for articles that cited previously identified papers. Finally, I contacted researchers in the field for papers that were mentioned as unpublished or under-review. Admittedly, because I did not ask researchers for file drawer studies, my review is by no means a reliable test of the actual effect of priming manipulation on automatic goal pursuit. Appendix A presents the information collected from the 117 studies that I reviewed (found in 56 published articles). Following are the answers I found to the three questions listed in the onset of this section.
Does Automatic Goal Pursuit Elude Awareness?

Although researchers of automatic goal pursuit typically use the terms “automatic” and “unconscious” synonymously, it is not always clear which part of the goal pursuit is unconscious. The right column in Figure 10 describes the three components of automatic goal pursuit that can elude awareness. The minimal unawareness would be when people are unaware of how the goal was activated (the priming activates a goal box), but are aware that they suddenly have the goal—that is, the goal pursuit might be completely conscious and deliberate. A more unconscious possibility is if people are also unaware that they have the goal (the Goal is active box). Another possibility is that people are unaware that they are pursuing the goal (Goal is pursued box). In that case, they might still know that they have the goal (e.g., “I know I wanted to compete”) but are unaware of how it affects their behavior (e.g., “I did not notice I did anything about it”).
Figure 10: Awareness in automatic goal pursuit research

Notes. (a) The Automatic Goal Pursuit column describes three components of automatic goal pursuit that people can be aware of; (b) The Awareness Test column describes the four questions that were used in studies to detect awareness; (c) The question about the priming effect gauges awareness for the causal link between components; It is silent about whether participants were aware of the components; (d) The question about desire to pursue the goal was used in some studies as a dependent variable (orange boxes) and in others as an awareness test (grey boxes); (e) The color code indicates to which question each number pertains; (f) The # Studies Used column refers to the total number of studies that posed each question.

These different levels of awareness have different implications for the CSH. If people are unaware only of how the goal was activated, but know that they have the goal and are actively pursuing it, they are unlikely to misattribute their behavior to the wrong goal. If people know that they have the goal but are unaware of how it is affecting their behavior, some misattribution
might occur (e.g., “I know I want to compete but that isn’t why I argued with my boyfriend about politics, I just really care about the election”). If people are unaware of how the goal was activated, that they have the goal, and that it is influencing their behavior, they are the most likely to confabulate the wrong reasons for their behavior.

Table 1: Unawareness table

<table>
<thead>
<tr>
<th>Awareness test</th>
<th>Did the priming affect behavior?</th>
<th>Do you want to pursue the goal?</th>
<th>Did you want to pursue the goal? (DV)</th>
<th>Did you have this goal during the study?</th>
<th>Did you pursue this goal?</th>
</tr>
</thead>
<tbody>
<tr>
<td># studies measured used</td>
<td>94</td>
<td>16</td>
<td>15</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td># studies with affirmative answer</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Total number of studies reviewed: 117. The question “Do you want to pursue the goal?” is presented separately because when it was used as a DV, the priming always had influence on the response, whereas it has never influenced the response when the same question was used as an awareness test.*

Figure 10 and Table 1 present a summary of the awareness tests used in the reviewed studies (See Appendix A for the awareness coding of each study). The question about the effect of the priming procedure pertains to the causal links between priming and behavior, but it does not measure awareness about whether the priming activated a goal, whether the goal was active and whether the goal was pursued. Two questions examined whether participants were aware of having the goal (the *Goal is Active* box in Figure 10). Participants were asked retrospectively (e.g., *did you want to help during the study?*), or were probed for their current desire (e.g., *How much do you want to help?*). This last question was used either as a dependent variable to demonstrate the effect of the manipulation, or as an awareness test to demonstrate that the
manipulation was not detected. Finally, participants were sometimes probed for their awareness of pursuing the goal (e.g., Did you try to help during the study?).

As seen in Table 1, 94 (80%) of the studies asked participants whether the priming task affected their behavior in subsequent tasks (see also the blue boxes in Figure 10). In all studies, the vast majority of participants denied this connection. This, however, attests only to the most minimal awareness criterion: awareness of how the goal was activated. In those cases, participants might have still been completely aware of the goal and its pursuit, and only unaware that it was activated by the priming task.

In 15 (13%) studies, one of the dependent variables was the reported desire to pursue the goal, as a measure of whether the priming activated the goal (the orange boxes in Figure 10). In 16 (14%) studies, the same question was used as a measure to assess whether participants were aware of the goal (grey boxes in Figure 10). As it is often the case with published papers (Greenwald, 1975), the results on those measures always matched the prediction of the researchers. In comparison to control participants, primed participants never reported stronger desire to attain the goal when the question was used as a test of awareness, and always reported stronger desire to attain the goal when the question was used as a dependent variable. Though submission and publication biases may account for this discrepancy, the reason may lie in the different procedures that were used in these two groups of studies. One such difference is the timing of the question. Of the 15 studies that used reported goal desirability as a dependent variable to gauge the activation of the goal, only 2 (Shah, 2003, Studies 1-2) measured both behavior and goal desirability. In the other 13 studies, the goal desirability was measured soon after the goal induction, and often with task demands that were aimed to capture gut reactions (e.g., Custers & Aarts, 2005, Studies 1, 2A and 2C). In contrast, when the goal desirability was
used as a part of the awareness test, it was measured at the end of the study, after a few other measures and tasks.

Participants were asked in only 11 (9%) studies whether they tried to attain the goal during the behavioral measure (the green boxes in Figure 10). In all these studies participants were also asked whether they had the goal during the study. In no study did primed participants report a stronger effort to attain the goal than did control participants. These are the only studies that showed full unawareness of both having and pursuing the goal.

A few studies used open-ended questions about what goals were pursued, as a part of the funnel debriefing at the end of priming studies, and all reported no mention of the primed goals. For example, in the first published study of automatic goal pursuits (Chartrand & Bargh, 1996, Study 1), in the funnel debriefing, it was reported that “When asked [of their goals during the measured behavior], participants reported other purposes in line with the cover story given to them of studying cognitive processes involved in sentence structure and reading tasks” (p. 468).

The question of how desirable people viewed the primed goal is different from whether they have this goal right now and whether they have just pursued the goal. Each shows a different kind of awareness, but none is the perfect test of awareness because they all might provoke people to self-reflect and attribute from their behavior to the goal. On the other hand, failure to report awareness of the goal pursuit after the behavior may reflect forgetting, and not lack of awareness. Indeed, awareness is not easily measured (Bowers, 1984; Reingold & Merikle, 1990; Shanks & St. John, 1994; Erdelyi, 2004) because the awareness measure can often be influenced by the automatic, unconscious processes (failing the exclusiveness criterion), or fall short of documenting fleeting awareness that is soon forgotten (failing the exhaustiveness criterion; Ericsson & Simon, 1980). However, as it is often the case with social sciences, findings can at
least provide information about whether a process is more (or less) likely to operate without awareness.

Research about unconscious effects – whether it pertains to attitudes, perception or learning – often grapples with questions of awareness. Because awareness is so difficult to measure, I suggest a more practical approach. Researchers should consider why it matters whether the effects that they study involve awareness. The question should not be whether awareness happens or not, but whether the studied processes have different implications because they are, presumably, unconscious. Then, instead of measuring awareness, research should measure the implications. Not coincidentally, this paper is about such implications. Automatic goal pursuit is more likely to cause confabulation if the goal pursuit happens with low or no awareness, or at least if after automatic goal pursuit, people tend to forget which goal they had been pursuing. In that respect, awareness tests are informative, even if they do not measure awareness perfectly.

Confabulation is more likely to occur if participants did not know that the goal was active, or at least that they tried to pursue it. In Figure 10, these cases are colored in grey, red and green (because these pertain to questions that gauge awareness of the two latter components in the automatic goal pursuit). An inspection of the left panel of that figure indicates that 20 studies gauged unawareness of at least one of these two components. All these studies found that participants were unaware of both components: the goal’s desirability and the goal pursuit. This is encouraging evidence for the CSH.

On the other hand, the orange boxes in Figure 10, those that pertain to the self-reported desirability of the primed goal when it was used as a dependent measure, cast some doubts on this encouraging evidence. This suggests that in certain circumstances, people are aware of the primed goal. Dijksterhuis, Chartrand and Aarts (2007) suggested that priming may affect
conscious goal setting when a person needs to disambiguate a given goal situation, or is triggered to reflect on and describe his/her desires and goals before or after action performance. This does not explain why triggering a person to reflect on her goals is affected by the prime only when it is used as a dependent measure rather than an awareness test. Solving this mystery will help predict when automatic goal pursuit is more likely to elicit self-misattribution.

Does Automatic Goal Pursuit Elicit Self-Attribution?

Self-attribution requires input. The behavior engendered by automatic goal pursuit is input because most behaviors that can be measured by researchers are also perceivable by the people who engage in them. However, it is obvious that people do not consciously try to explain every behavior they enact. Wilson, Dunn, Kraft, and Lisle (1989) suggested that the factors that increase the likelihood of spontaneous causal attribution in general (Weiner, 1985) may also be relevant to causal self-attribution, such as an explicit request to explain one’s behavior, an unexpected event, and experiencing lack of control.

Conscious self-attribution is probably not the only way by which behavior affects self-knowledge. To appreciate the wealth of possible effects that behavior may have on self-knowledge, consider a participant who cleans up her desk at the end the experiment because she was primed with a tidiness goal (Morrison, Wheeler & Smeeters, 2007). She definitely perceives her actions as she picks up the questionnaires and the pens she used and returns them to their container (this was the tidiness behavior measured in that study). This behavior may have the following effects on self-knowledge:

(1) Direct self-attribution. The primed behavior (cleaning up) may elicit a self-attribution question, “why am I doing this?” The person’s answer to this question might have an effect on
self-knowledge (either accurately, e.g., “I wanted to be tidy,” or inaccurately, e.g., “I wanted to please the experimenter”).

(2) Memory for behavior. The behavior is stored in the actor’s memory, and might be retrieved when she is later asked, by herself or others, whether she tried to make the experimenter like her more (or, in a non-cofabulative scenario, whether she wanted to be tidy).

(3) Strengthening associations. The behavior may activate, even automatically, concepts related to the behavior, such as tidiness and helping. Because this behavior is filed under my behaviors, this incidence may strengthen the association between self and tidiness. This may have a direct effect on the intuitive reaction to a later question “Does ‘tidiness’ describe me?” even without retrieving the memory of the behavior. Theoretically, any goal pursuit might have this implicit self-attribution effect. It is always possible that the effect on behavior involved automatic activation of a mental representation specific for the effect. For instance, unconsciously working faster than usual on a task requires an unconscious “decision” to do so. This may involve the activation of the concept go faster. In that case, at least the mental representation of the goal go faster might be active, strengthening its association with self (assuming that self is active as well). Later on, when the participant ponders on whether she generally wants to finish chores faster, the stronger association of me + go faster might contribute to her self-attribution process.

Sometimes the effect of the automatic goal activation is unlikely to be missed by participants, such as agreeing or refusing a request to volunteer for another study (Fitzsimons & Bargh, 2003). Other times, however, the effect is subtle, such as how quickly people complete one task in order to have time for another (Custers & Aarts, 2005). In order for confabulation to occur, people must notice the effect and try to explain it (implicitly or explicitly). But, only very few studies
gauged whether participants noticed the behavior influenced by the primed goal (Aarts, Gollwizer & Hassin, 2004; Chartrand, Dalton & Fitzsimons, 2006; Shah & Kruglanski, 2003; Fitzsimons & Bargh, 2003; Holland, Hendricks & Aarts, 2005; Bargh et. al, 2001). Five of these six reports found that the self-reported behavior of primed participants did not differ from the self-report of participants in the control group. For instance, in one study (Aarts et. al, 2004), money-primed participants performed faster than control participants in a filler task in order to have enough time for another task in which they can win money in a lottery. However, they did not report performing faster than did participants in the control group. In the one study that found a difference in the self-reported behavior (Shah & Kruglanski, 2003), participants who were primed with a goal to engage in a certain task were asked to first engage in a different task. In the behavioral measure, these participants showed reduced performance in the non-primed task, presumably because they were distracted by their desire to perform the primed task. Interestingly, the primed participants also reported more difficulty concentrating on the first task, caused by their distracting thoughts of the primed task. It should be noted that none of the studies provided information whether participants spontaneously tried to explain their behavior.

Because spontaneous self-attribution has never been measured in automatic goal pursuit studies, and awareness of behavior was rarely measured as well, the most relevant available information is the type of the dependent measure used in the studies. Were participants likely to notice the behavior that was elicited by the primed goal, and were they likely to try to explain why they did it? In reviewing the dependent measures, I identified four types relevant to the question of whether people noticed the behavior. The frequencies of these behaviors are presented in Table 2.
Table 2: Types of Behavior

<table>
<thead>
<tr>
<th></th>
<th>Direct self-report about desirability of the goal</th>
<th>Indirect self-report</th>
<th>Choice</th>
<th>Continuous behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td># of studies</td>
<td>15</td>
<td>13</td>
<td>24</td>
<td>71</td>
</tr>
</tbody>
</table>

1. Self-reported desirability of goals or activities.

As mentioned in the previous section, goal-desirability direct questions were used 15 (13%) times. For instance, Custers & Aarts studies (2005) asked participants whether they would want to pursue five different goals, and found that participants showed preference for goals that were associated with positive value via conditioning. Obviously, reporting about the desirability of a goal does not leave room to confabulate other goals. If participants try to explain why they want to pursue the goal, they might come up with the wrong reasons (e.g., superordinate goals, or contextual reasons). However, in that case, the real cause for the goal desirability is priming, which is not a high-level internal cause. Because the novelty of the CSH is the addition of high-level internal causes as the real causes of behavior, such confabulation is less interesting in the present context.

2. Indirect self-report measures

Thirteen studies (11%) used indirect self-report measure. Such self-reports were used to assess constructs, other than the goal desirability itself, that may be affected by the goal pursuit. For instance, after priming their participants with either the goal to watch their weight or to enjoy food, Fishbach, Shah, and Kruglanski (2004) asked their participants how eating different types of food would make them feel. People who were primed with the goal of enjoying food reported more positive feelings about fatty food than the other participants, and people who were primed with the goal of weight watching reported more positive feelings about healthy non-fat food.
Self-reported constructs may capture enough attention for self-attribution processes to occur. Participants might form explicit memories for later self-attribution and/or implicit memories for later intuitive self-attribution. Their responses to the self-report might have also elicited immediate self-attribution (i.e., people tried to justify their answers). This suggests that this type of behaviors is more likely to elicit self-attribution.

3. Choice.

Twenty four studies (21%) used choice measures in which participants were asked to choose between a few options. For instance, the experimenter may drop used tissue and the participant then has the choice whether to pick it up or not (a behavioral measure for a helping goal, Custers, Maas, Wildenbeest & Aarts, 2007). This is a behavioral measure but it requires participants to make a choice that is likely to be conscious, likely to be explicitly remembered and retrieved later in a future self-attribution, and is also likely to be stored as implicit memory that may affect future intuitive self-attribution. It may also elicit spontaneous self-attribution near the choice behavior.

4. Behavioral continuum

The majority of studies (71, 61%) used a behavioral continuum as the dependent measure. Non-choice behavioral measures are usually behaviors that participants are explicitly required to perform. There are two types of such behavior, one is when the explicitly stated purpose, end-state or goal of the behavior is the measure (used in 48 studies, 41%), and the other is when one of the other aspects of the behavior is linked to the primed goal (used in 25 studies, 21%). For instance, to measure helpfulness, participants were asked to provide feedback to the experimenter at the end of the study (Aarts et. al, 2005). Longer feedback indicated a stronger helping goal. In this instance, there was an explicit goal to the task: helping the experimenter.
Importantly, the explicit goal does not have to be the primed-goal. For instance, in the mouse-click measure (Aarts, Gollwitzer & Hassin, 2004; Aarts et. al, 2005; Custers & Aarts, 2005; Custers & Aarts, 2007), the explicit goal of the task is to click on the shapes that appear on the screen as quickly as possible. Participants perform better in that task when they want to finish this task faster in order to reach the next task in the experiment that can provide them the attainment of the goal (e.g., a lottery ticket to a party when the primed goal is socializing, Custers & Aarts, 2007). In this case, if the participants notice their behavior, they only know that they had the goal to go faster, but self-attribution is still required to infer why they wanted to finish this task quickly. An example of a less direct behavioral measure is a dot-probe task that measured whether people paid more attention to attractive opposite-sex faces after they were primed with a mate-search goal (Maner, Gailliot, Rouby & Miller, 2007). In this case, the explicit goal of the task was attending to a dot on the screen, and the attention to the attractive faces was an interference measure.

Unlike the other measures, the non-choice behavioral measures do not have a salient alternative behavior. That is, people do not usually explicitly consider working slowly on the mouse-click task, or providing less feedback to the experimenter. Also, because the measure is a continuum, it is very difficult to notice the effect of the primed goal (e.g., that one is faster or provides more feedback than they would have been). Participants surely notice that they perform the task, but unless their effort is exceptional, they are not likely to reflect on it while doing the task (“I’m working really fast, I wonder why”). So, both direct self-attribution an explicit memory are less likely in these cases. On the other hand, if special effort is required, it is conceivable that participants may notice that they trying harder than they would expect. Then, explicit memory, self-attribution and self-confabulation may all occur (e.g., “Why am I giving
such detailed feedback?”). As discussed earlier, in any case, even when people do not notice their behavior or try to explain it the goal-primed behavior may be registered and affect later intuitive self-attribution.

The vast majority of measures behavioral continua (66%) – the measures that have the least likelihood of eliciting a self-attribution inquiry. However, as mentioned before, even the most covert measures, such as the dot-probe task mentioned earlier (Maner, Gailliot, Rouby & Miller, 2007), or a single-detection task in which bias to respond with a hit reflected the goal to earn money (because participants were paid per hits, Dik & Aarts, 2007), may still elicit awareness and self-attribution investigation if the effect of the goal is strong enough. In the dot-probe task, one may notice that their attention is often distracted by attractive people of the opposite sex. In the single-detection task, people may notice their bias to indicate hit. In that case, primed participants will be more likely to notice these behaviors and may open a self-investigation to understand why this happened.

In conclusion, in this section we learned that tests of self-confabulation should choose the goal-affected behavior very carefully, preferring choice behaviors or at least continuous behaviors in which participants are likely to be sensitive to the amount of effort they put in the task. Fortunately, there are enough studies that used choice or indirect self-report measures to suggest that automatic goal pursuit can affect choice behavior. Choices have been shown to affect self-knowledge (Brehm, 1956), and therefore choice behavior is a good candidate for research that will investigate the effect of priming on self-attribution.

The review in this section also points to additional uncharted territories in the field of automatic goal pursuit: participants’ awareness of the behavior and choices caused by the priming manipulation (rather than the goal pursuit or the goal activation). It would be
informative to study when awareness and self-attribution occurs, and when priming affects behaviors without eliciting awareness and self-attribution processes, regardless of the question whether the self-attribution is accurate or confabulated.

*Is it Difficult to Deduce the Automatic Goals from their Observable Effect?*

As mentioned, automatically-primed behavior can lead to correct self-knowledge even without direct awareness of the effect. For example, people might not be aware that they cleaned up their desk because “tidiness” was primed, but each of the three effects of behavior on self-knowledge listed above might indeed strengthen the *tidiness-me* association. This will not lead to confabulation, but to accurate self-knowledge. The three determinants of attribution, *accessibility, plausibility* and *self-promotion* (APS) suggest that confabulation may occur when the actual cause is not as high as other causes on some or all of these factors. The fact that the association *goal-behavior* was strong enough to affect the behavior does not mean that it is the association that will receive the strongest boost from these three mechanisms. In other words, goal pursuit and goal inference may be asymmetrical. For instance, if clearing the table (the behavior caused by tidiness priming in Morrison, Wheeler, & Smeeters, 2007) is strongly associated with *trying to make the experimenter like me*, the direct self-attribution might result with a conclusion that *impressing others*, the more plausible and accessible reason, was the reason for the behavior. The behavior might also be more easily retrieved when thinking about *things I did to make people like me*, than when thinking about *tidy behaviors*. Finally, the behavior might strengthen the association *me-impressing others* more than the association, *me-tidy*, which is the real association that caused the behavior.

Research on automatic goals has investigated only the path from goal activation to behavior, thus the question of how people explain these behaviors, and when they will make correct
inferences, is an open empirical question. However, an inspection of the goal pursuit path in the reviewed research, and speculations about the kind of primed goals that may not be easily traced back from behavior, may suggest a few assumptions about when self-confabulation is more likely to occur.

1. Superordinate Goals

The association between goals and means (i.e., behaviors) is thoroughly examined in the Goal System Theory (Kruglanski, 1996; Kruglanski et. al, 2002). According to this theory, goals form a hierarchical network with superordinate goals associatively linked to means of attaining them (subordinate goals and behaviors). The theory predicts that superordinate goals would activate their subordinate goals that will then activate their means. For instance, a man’s goal of obtaining sex might activate the goal of helping a female experimenter that might then activate the means of providing her feedback about her experiment (Aarts, Gollwitzer & Hassin, 2004). These are the associations that affect behavior. However, these associations may not have the same impact on inference. When explaining why they provided feedback to the experimenter, the most accessible, plausible, and self-promoting explanation might be that they had the goal to help her. In contrast, the superordinate goal that actually caused the behavior and the subordinate goal – obtaining sex – might not leave enough evidence for a successful inference. In fact, helping might be more strongly related to being a good Christian or to other superordinate goals. Thus, in the inference process, providing feedback about the experiment might activate religious goals and not the actual goal that caused the behavior. This illustrates that superordinate goals may be exactly the kind of goals that affect behavior the most, but also stay far from the sight of self-attribution. In my review I found a few general, superordinate goals such as autonomous motivation (Hodgins, Brown & Carver, 2007; Levesque & Pelletier,
2003), self-improvement (Fishbach & Labroo, 2007), epistemic motivation (Lun, Sinclair, Whitchurch & Glenn, 2007), and preparedness to meet a person of a certain social group (Cesario, Plaks & Higgins, 2006). These are probably less likely to be traced back using inference because of their relative abstractness.

2. Goals that Lose the APS Contest

In most studies, the three principles of self-attribution suggested earlier – *accessibility*, *plausibility* and *self-promoting* (APS) – usually point back from behavior to the right goal. To measure helping, researchers usually used helping behavior, to measure competition, researchers tended to use competitive behavior. In other words, the most plausible explanation of why one helped is that one was helpful. The reason is probably that researchers focused on proving that the goal was indeed induced, and therefore a remotely related behavior would have cast difficulties. For instance, in research that focused on the claim that significant others activate relevant goals (Fitzsimons & Bargh, 2003; Morrison, Wheeler & Smeeters, 2007; Shah 2003), it was important to show that the exact goals were activated, and therefore behaviors that clearly reflect those goals were chosen. Thus, to accommodate the researchers and reviewers’ need to make sure that indeed the behaviors were activated by the primed goals, it was important that the inference process from behavior to goals will be as plausible as possible.

However, reviewing the behaviors used, it is also obvious that many of them can be construed as servicing goals different than the primed goals. These other goals might be more accessible, plausible and self-promoting. For instance, when asked whether they are willing to stay after the study is over and participate in another one as a measure of primed help (Dik & Aarts, 2006), people may attribute their consent to other goals triggered by the context of the study: socializing with the experimenter, filling the time until the next class, or curiosity about
psychology. Another example is studies that primed achievement or competition and used puzzles as the measure, disguised as a pilot of materials for future studies (Bargh et. al, 2001; Morrison, Wheeler, & Smeeters, 2007; Stajkovic et. al, 2006). In these studies, participants who were primed with achievement goals might take the puzzles more seriously than control participants and may notice their unusual persistence and effort. Because the explicit goal is to help the researchers pilot materials, they might attribute their behavior to this goal.

Turning to the self-promotion parameter, I found a few primed-goals that might not always be construed as personally accepted (i.e., self-condemned goals). For instance, resource sharing games were often used to measure competition or cooperation goal pursuit (Bargh et. al, 2001; Shariff & Norenzayan, 2007; Kay & Ross, 2003; Kay et. al, 2004; Hassin & Kleiman, in press; Kawada et. al, 2004; Utz et. al, 2004). In those games people may be more inclined to explain their behavior in terms of fairness, rather than with the goals competition (that might be negatively viewed as being inconsiderate) or cooperation (that might be negatively viewed as being weak). A stronger example might be studies that activated the goal of seeking causal sex (Aarts et. al, 2004). In that case, non-single male participants may be less inclined to attribute their helping behavior to this goal.

One might question whether participants would even be affected by primed self-condemned goal, considering that, even automatically, participants tend to pursue positive valenced goals (Custers & Aarts, 2005). However, judging a goal as immoral or irrational does not indicate that it is also judged as undesirable. After all, most goals have both negative and positive outcomes. For instance, Fishbach and Labroo (2007) primed either a self-improvement goal or a having-fun goal. This had an effect on participants’ behavior in self-control tasks. Because self-control is a
conflict situation, it is obvious that both goals had negative and positive outcomes. Nevertheless, each goal was pursued by the participants who were primed with it.

It is noteworthy that in the example mentioned earlier, participants who provided more feedback to a female experimenter because they were primed with sex-seeking goal wrote their feedback on the computer (Aarts, Gollwitzer & Hassin, 2004). They did not meet her, or even expected to know who she was. This is an irrational behavior because it cannot promote the goal that was primed. Irrationality might cause pursuit/inference asymmetry via two parameters: it does not seem plausible that the primed goal caused the behavior, and it is also not flattering to self-ascribe irrationality.

Finally, one study illustrates most of the lessons learned in this section. In that study participants were primed with a clearly negative goal: being combative and judgmental (Oettingen et. al, 2006). Though this might be construed as a behavioral priming (just like rudeness in Bargh, Chen and Burrows, 1996), I think that it is likely that people sometimes have the goal to be reactive and critical, probably in the service of self-esteem maintenance or the goal of feeling powerful. Such self-condemned but also desirable goals are the best candidates to cause self-confabulation because they include all the conditions for confabulation reviewed in this section. They are likely to occur often (because most people have a goal to maintain their self-esteem), they are fairly high-level (i.e., superordinate), they are separated from the behavior with a few other low-level goals (e.g., find what is wrong with the essay written by the confederate, in Oettingen et. al, 2006), these behaviors sometimes have other accessible and plausible decoy goals that can feed the confabulation (e.g., trying to be accurate, sincere and helpful), and people would be motivated to attribute these behaviors to the decoy superordinate goals, because these are more flattering.
Automatic Goal Pursuit and Confabulation: Summary

The current findings from research on automatic goal pursuit reveal several gaps from the viewpoint of the CSH. It is unclear whether in most of these studies participants were, in fact, aware that they pursued or desired the primed goal. It is also unclear whether the behaviors triggered by the automatic goal activation elicited self-attribution. Finally, it seems that most research has used behaviors that can be easily inferred back to the primed goals rather than to confabulated goals. For these reasons, I cannot safely conclude that the current findings demonstrated enough evidence to predict that goals confabulation occurs often after automatic goal pursuit.

On the other hand, the current findings also do not preclude this possibility. In fact, some of the studies showed conditions that can cause confabulation. Some studies have shown that goals priming can elicit goal directed behavior without the participants being able to report that they had this goal and that they tried to attain it. Additionally, in some of the studies the goal pursuit influenced a choice – the kind of behavior that is likely to elicit self-attribution processes. Finally, some of the goals were not the type of goals that people would desire to attribute to themselves, and some caused behaviors that cannot be easily traced back to the goals, by inference.

SUMMARY: WHERE CAN WE GO FROM HERE

The claims that people are often unaware of the reasons of their behavior, and that their explanations for their behavior are often inaccurate cannot seem new to anyone who has ever studied psychology. The findings about poor self-knowledge and inaccurate attribution fit nicely
with the many findings about unconscious behavior. The link is obvious: people’s self-knowledge is poor because they lack access to many of their mental processes. However, this claim has not been pursued experimentally in any systematic fashion. The causes of behavior that were used in self-(mis)attribution studies were limited and did not include most of the goals that cause people’s behavior in everyday life. Research on automatic goal pursuit suggests that goals can operate unconsciously. If goal pursuit can indeed elude awareness, then the same effects that were shown by studies of self-attribution might be prevalent in everyday life and involve a wider range of goals. And yet, as we have seen, the literature on automatic goal activation has not examined how people explain their behavior to themselves.

Because the link between automatic social behavior and poor self-knowledge seems so obvious, the paper was initially planned to easily convince the reader that empirical social psychology has already enough information to determine that self-confabulation exists. However, this review found many open questions related to automatic goal pursuit and self-misattribution. Perhaps these questions are far more interesting and important than my peculiar interest in post-priming confabulation. For that reason, I conclude this paper with a list of the questions raised here, framed as suggestions for future research programs, some specific to the CSH, but most more general.

**Automatic Goal Pursuit and Awareness**

Automatic goal pursuit research documented mixed findings about awareness. Some studies have shown the priming goals can affect self-reported desire to attain them, whereas other studies have ruled out awareness of the goal activation and pursuit using very similar measures. It would advance the understanding of automatic goal pursuit to learn what factors lead priming to trigger conscious goal activation and what factors do not.
One of the main reasons for the limited information about awareness in automatic goal pursuit is that most researchers do not ask their participants about their behaviors and goals. A vast majority of studies of automatic goal pursuit only asked participants whether they thought that there was any causal relationship between the priming manipulation and dependent measure. Such test may be good enough to show that the goal was activated automatically (i.e., people did not consciously used the priming manipulation as a reason to pursue the goal). Clearly, automatic goal pursuit is an important effect even if it happens with awareness because it suggests that complex social behaviors do not require conscious intention, and that this type of behavior can be explained with an easily studied and theoretically modeled cognitive system: the associative network. I do not wish to contribute to the exaggerated attention that the awareness question has received from empirical psychologists over the past few decades. However, it would be informative to learn what people think that they are doing when they pursue goals automatically. For instance, it can teach us whether people can easily take conscious control on automatic goal pursuit, and, of course, about the accuracy of the self-theories that people acquire from these types of behaviors. Importantly, these data can be easily collected in each and every automatic goal pursuit study.

*The Type of Behaviors Instigated by Automatic Goal Pursuit*

People can automatically work faster, or try harder, if it serves a primed goal. They can also choose an alternative that facilitates a primed goal. They can also report about desires and attitudes that fit this goal. Finally, a primed goal can also increase the reported desire to attain that goal. These are different behaviors that might require different psychological processes. How does goal priming affect each of these behaviors? An investigation that focuses on the specific behaviors that are affected by primed goals will add knowledge about the effects of
automatic goal pursuit and is likely to advance the understanding of how this effect works. This may also teach us when people are likely to examine the behavior caused by the automatic pursuit and try to explain it.

*The Type of Goals Instigated by Automatic Goal Pursuit*

Research has not focused systematically on the type of goals that can be pursued automatically. All accounts for goal pursuit assume that people do not try to attain primed goals unless the association between the goal and the attempt to attain it was ingrained in them through past goal-behavior instances. However, this still leaves us with a wide range of different types of goals that may have different implications when pursued automatically. In this paper I emphasized two dimensions of goals that may be of interest. One division is between self-praised and self-condemned goals, and the other is between superordinate and subordinate goals.

People often pursue self-condemned goals (or at least ones that conflict with other goals). They eat when they are on diet, go out when they need to study, betray their loved ones, hurt others with words or actions, or raise a subject in conversation that they planned to avoid. Is it easier to pursue these goals automatically, maybe without awareness? This question has received very little attention (Oettingen et. al, 2006; Fishbach & Labroo, 2007). Are people more or less likely to try to explain behaviors caused by the automatic pursuit of self-condemned goals? Are people less or more likely to accurately link behaviors to these goals?

Another possible distinction between types of goals is their hierarchal level (Chulef, Read & Walsh, 2001; Pieters, Baumgartner & Allen, 1995; Vallacher & Wegner, 1987). Is it easier to cause automatic goal pursuit of low-level, immediate goals (e.g., doing number-sequence puzzles, Custers & Aarts, 2005), or high-level, more general goals (e.g., make mother proud, Fitzsimons & Bargh, 2003)? Do high-level goals affect behavior for longer time, because the
end-state is less defined, or does their abstract definition cause them to dissipate faster? If a low-level goal is primed, does it activate the pursuit of a higher-level, superordinate, goal that is associated with it? How far up in the hierarchy do most self-attribution processes go? Are most superordinate goals operate undetected even though they can be activated and cause behavior? Are there high-level goals that cause many behaviors but are hardly ever discovered by self-attribution because they operate unconsciously and are seldom traced back by the self-inference investigation?

**Causes of Self-(mis)attribution**

Research on the explanation of one’s own behavior and attitudes has not yet studied the self-attribution of goal directed behaviors, attitudes and feelings. As discussed in this paper, automatic goal pursuit may serve as a useful tool to study that. However, it is definitely not the only way to investigate self-confabulation. Social psychologists induce goals and cause behaviors even without priming. I suspect that participants are often unaware of the link between the induced goals and these behaviors. Examining how people explain the outcome behavior and how this explanation contributes to their self-knowledge is another promising research direction in the study of self-knowledge formation and, more generally, the unconscious aspects of the self.

For example, one particularly promising goal, often studied by social psychologists is self-esteem maintenance (Baumeister, 1998; Kunda & Sanitioso, 1989; Shrauger, 1975; Steele, 1988; Tesser, 1988). People engage in many behaviors aimed at maintaining high self-esteem (e.g., Fein & Spencer, 1997; Pemberton & Sedikides, 2001). I suspect that this goal controls a wide range of our behaviors, way beyond people’s awareness of its effect on them. I believe that research that will focus on the ways that people explain behaviors caused by a self-esteem
maintenance goal will capture the largest portion of behaviors and self-attributions, and will add much information on self-attribution and self-knowledge formation.

**Final Summary**

This paper discussed the confabulated-self hypothesis: people’s accounts of causes that affect their behaviors are often inaccurate because causes often operate unconsciously, and therefore it leads people to misattribute the behavior to the other, decoy reasons, contributing to the formation of inaccurate self-knowledge. Because the literature on automatic goal pursuit focuses on a pursuit that may occur without awareness, it seemed like a method useful in investigating the CSH. This will expand the study of self-perception, by adding behaviors that are caused by a variety of personal goals, rather than the limited range of causes used to induce behaviors in research on self-attribution. It will also expand the study of automatic goal pursuit, by studying the implications of this type of pursuit, in contrast to conscious, deliberate, controlled goal pursuit. Importantly, it would advance the discussion about unconscious processes and self-misattribution from situational one-time effects, to a more constant self-misleading reality, in which people repeatedly try to attain certain goals but attribute the goal pursuit behavior to other, self-stated goals.

In my review I tried to summarize the current relevant knowledge about self-attribution and automatic goal pursuit, in order to determine how likely the CSH is. I do not think that my review added much knowledge about whether people are likely to indeed confabulate many of their day-to-day goal pursuits to the wrong goals. Therefore, I would like to convert this uncertainty to a firm assertion about the further research directions that would benefit research on automatic goal pursuit and self-attribution. In a final repetition of these directions I recommend on a systematic inspection of awareness in automatic goal pursuit, of the different
types of behaviors that this pursuit can elicit, and of the type of goals that can be pursued automatically (self-praised versus self-condemned and superordinate versus subordinate). With regard to self-attribution research, I believe that much can be learned about self-knowledge and goal-directed behavior from investigating goals that cause behaviors (automatically or not) that are not easily traced back to them, especially self-esteem maintenance goals.
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References marked with asterisk indicate studies included in the summary of research on automatic goals (Appendix A).


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APPENDIX A: The Reviewed Studies

For each study, I documented the primed goal, the priming method, the behavior, and the awareness test. I categorized the behavior to five types: direct self-report, indirect self-report, choice, continuous behavior. I categorized the awareness test to five types: priming awareness (“Do you think that the priming procedure affected subsequent tasks?”); goal setting awareness (“Did you have this goal during the study?”); Goal active awareness (“How much do you want to pursue the Goal?” used as awareness test); Goal Desirability (“How much do you want to pursue the Goal?” Used as a dependent measure); Goal pursuit awareness (“Did you pursue that goal during the study?”); and none.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Prime</th>
<th>Behavior</th>
<th>Type of Behavior</th>
<th>Paper/Study</th>
<th>Awareness test</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earning money</td>
<td>Just reading sentences that describe people either exerting high or no effort to get money (and say whether a probe word appeared there or not)</td>
<td>A signal detection task in which “yes” rewards money</td>
<td>Continuous behavior</td>
<td>Dik &amp; aartz, under review, S 1-2 [do not distribute this one until accepted, or with Dik’s permission]</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Earning money</td>
<td>Just reading sentences</td>
<td>Self-reported desire to ‘have money’, ‘receive your wages’</td>
<td>Direct self-report</td>
<td>Dik &amp; aartz, under review, S 3 [do not distribute this one until accepted, or with Dik’s]</td>
<td>Priming awareness, goal desirability</td>
<td></td>
</tr>
<tr>
<td>Cooperation</td>
<td>Scrambled</td>
<td>Fish game</td>
<td>Choice</td>
<td>Eitan, Hassin &amp; Schul, 2008, E 1</td>
<td>Priming awareness, goal setting</td>
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<tr>
<td>Cooperation</td>
<td>Word-search puzzle</td>
<td>Fish game</td>
<td>Choice</td>
<td>Eitan, Hassin &amp; Schul, 2008, S 2</td>
<td>Priming awareness, goal active</td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td>Word-search puzzle</td>
<td>Fish game</td>
<td>Choice</td>
<td>Eitan, Hassin &amp; Schul, 2008, S 3</td>
<td>Priming awareness, goal active</td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
<td>Word-search puzzle</td>
<td>Performance in implicit learning (the factory task)</td>
<td>Continuous behavior</td>
<td>Eitan, Hassin &amp; Schul, 2008, E 1</td>
<td>Priming awareness, goal setting</td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
<td>Word-search puzzle</td>
<td>Performance in implicit learning (Serial reaction time task)</td>
<td>Continuous behavior</td>
<td>Eitan, Hassin &amp; Schul, 2008, E 2</td>
<td>Priming awareness, goal setting</td>
<td></td>
</tr>
<tr>
<td>Helping</td>
<td>Scrambled with nurse, firefighter, volunteer, fundraiser, rescuer, therapist.</td>
<td>Picking up unused/used tissue of the experiment</td>
<td>Choice</td>
<td>Custers et. al, 2007, E 1</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Helping</td>
<td>Subliminal priming with nurse</td>
<td>Providing a feedback about an earlier task to a Moroccan/Polish experimenter, typing it on the computer – number of lines and content (helpfulness)</td>
<td>Continuous behavior</td>
<td>Custers et. al, 2007, E 2</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Epistemic motivation</td>
<td>Sentences: certainty/uncertainty</td>
<td>becoming less prejudice (by adopting the experimenter’s presumed attitudes)</td>
<td>Continuous behavior</td>
<td>Lun et. al, 2007, E 2</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Epistemic motivation</td>
<td>Sentences: certainty/uncertainty</td>
<td>becoming less prejudice (by adopting the experimenter’s presumed attitudes)</td>
<td>Continuous behavior</td>
<td>Lun et. al, 2007, E 3</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
<td>Asking questions about Mother</td>
<td>generate as many words from a set of seven letters</td>
<td>Continuous behavior</td>
<td>Morrison, Wheeler, &amp; Smeeters, 2007, E 1</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Tidiness</td>
<td>Asking questions about Roommate</td>
<td>Leaving objects on in the lab room</td>
<td>Continuous behavior</td>
<td>Morrison, Wheeler, &amp; Smeeters, 2007, E 2</td>
<td>Moderation of need to belong</td>
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<tr>
<td>Achievement</td>
<td>Asking questions about Mother (2)</td>
<td>generate as many words from a set of seven letters</td>
<td>Continuous behavior</td>
<td>Morrison, Wheeler, &amp; Smeeters, 2007, E 3</td>
<td>In S 2 the measure was accessibility only</td>
<td></td>
</tr>
<tr>
<td>Pro-social behavior</td>
<td>Subliminal priming</td>
<td>take pamphlets about charities (how many)</td>
<td>Continuous behavior</td>
<td>Pichon, Boccato &amp; Saroglou, 2007, S 1</td>
<td>Priming awareness</td>
<td></td>
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<tr>
<td>mate-search motive</td>
<td>Scrambled</td>
<td>Attention to attractive others in a dot-prob task</td>
<td>Continuous behavior</td>
<td>Maner, Gailliot, Rouby &amp; Miller, 2007, S 2</td>
<td>Priming awareness, goal active</td>
<td></td>
</tr>
<tr>
<td>Helping</td>
<td>Watching animation of a circle trying to help a smaller circle (goal contagion)</td>
<td>Willingness (self-report 1-9 scale) to fill out a questionnaire for free at the end of the study</td>
<td>Indirect self-report</td>
<td>Dik &amp; Aarts, 2006, S 3</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>self-improvement or mood management</td>
<td>Scrambled</td>
<td>Handgrip (related to self-improvement)</td>
<td>Continuous behavior</td>
<td>Fishbach &amp; Labroo, 2007, S 3</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>self-improvement or mood management</td>
<td>Scrambled</td>
<td>Solving cognitive problems</td>
<td>Continuous behavior</td>
<td>Fishbach &amp; Labroo, 2007, S 5</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>health-improvement or mood management</td>
<td>Scrambled</td>
<td>Memory after reading about the risk of caffeine</td>
<td>Continuous behavior</td>
<td>Fishbach &amp; Labroo, 2007, S 4</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Intelligence (not exactly a goal)</td>
<td>Subliminal priming</td>
<td>Performance on tests</td>
<td>Continuous behavior</td>
<td>Lowery, Eisenberger, Hardin &amp; Sinclair, 2007, S 1</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Intelligence (not exactly a goal)</td>
<td>Subliminal priming</td>
<td>Performance on tests</td>
<td>Continuous behavior</td>
<td>Lowery, Eisenberger, Hardin &amp; Sinclair, 2007, S 2</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Control vs. autonomy (success vs. enjoyment)</td>
<td>Scrambled sentences</td>
<td>Measured self-esteem</td>
<td>Continuous behavior</td>
<td>Hodgins, Brown &amp; Carver, 2007, S 1</td>
<td>None</td>
<td>control motivation lowered implicit SE relative to autonomy motivation</td>
</tr>
<tr>
<td>Control vs. autonomy (success vs. enjoyment)</td>
<td>Scrambled sentences</td>
<td>Measured self-esteem</td>
<td>Continuous behavior</td>
<td>Hodgins, Brown &amp; Carver, 2007, S 2</td>
<td>None</td>
<td>control motivation lowered implicit SE relative to autonomy motivation</td>
</tr>
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<tr>
<td>Looking well-groomed</td>
<td>Subliminal priming</td>
<td>Self-report: How would you like to look physically?</td>
<td>Direct self-report</td>
<td>Custers &amp; Aarts, 2007, E 2A</td>
<td>Priming awareness, goal desirability</td>
<td>E 1 &amp; 3 just measured accessibility, and the measure in E2 was also construed as accessibility measure</td>
</tr>
<tr>
<td>Avoid mistakes (maybe not a goal)</td>
<td>Cover page of the packet was red</td>
<td>Performance in anagram solving (E 1) and IQ test (E 2)</td>
<td>Continuous behavior</td>
<td>Elliot et al., 2007, E 1</td>
<td>Priming awareness</td>
<td>Studied the automatic effect of the color red</td>
</tr>
<tr>
<td>Avoid mistakes (maybe not a goal)</td>
<td>Cover page of the packet was red</td>
<td>Performance in anagram solving (E 1) and IQ test (E 2)</td>
<td>Continuous behavior</td>
<td>Elliot et al., 2007, E 2</td>
<td>Priming awareness, goal setting, goal active, goal pursuit</td>
<td>Studied the automatic effect of the color red</td>
</tr>
<tr>
<td>Avoid mistakes (maybe not a goal)</td>
<td>Cover page of the packet was red</td>
<td>analogy (E 3 – like E2) or Math (E 4) subtest of the IST</td>
<td>Continuous behavior</td>
<td>Elliot et al., 2007, E 3</td>
<td>Priming awareness, goal setting, goal active, goal pursuit</td>
<td>Studied the automatic effect of the color red</td>
</tr>
<tr>
<td>Avoid mistakes (maybe not a goal)</td>
<td>Cover page of the packet was red</td>
<td>analogy (E 3 – like E2) or Math (E 4) subtest of the IST</td>
<td>Continuous behavior</td>
<td>Elliot et al., 2007, E 4</td>
<td>Priming awareness, goal setting, goal active, goal pursuit</td>
<td>Studied the automatic effect of the color red</td>
</tr>
<tr>
<td>Avoid mistakes (maybe not a goal)</td>
<td>Cover page of the packet was red</td>
<td>Selecting number of easy/difficult analogies</td>
<td>Choice</td>
<td>Elliot et al., 2007, E 5</td>
<td>Priming awareness</td>
<td>Studied the automatic effect of the color red</td>
</tr>
<tr>
<td>Avoid mistakes (maybe not a goal)</td>
<td>Cover page of the packet was red</td>
<td>EEG-measured brain activity that was mapped in the past to avoidance motivation</td>
<td>Continuous behavior</td>
<td>Elliot et al., 2007, E 6</td>
<td>Priming awareness</td>
<td>Studied the automatic effect of the color red</td>
</tr>
<tr>
<td>(inhibited)</td>
<td>EC with negative mouse-click speed to get to the</td>
<td>Continuous</td>
<td>Custers &amp; Aarts, 2007,</td>
<td>Priming awareness</td>
<td>Coactivation of</td>
<td></td>
</tr>
<tr>
<td>socialization</td>
<td>affect</td>
<td>lottery to go to the party in the city center, no less</td>
<td>behavior</td>
<td>E 3</td>
<td>goal and negative affect cause less pursuing</td>
<td></td>
</tr>
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</tr>
<tr>
<td>(inhibited) socialization</td>
<td>EC with negative affect</td>
<td>mouse-click speed to get to the lottery to go to the party in the city center, no less</td>
<td>Continuous behavior</td>
<td>Custers &amp; Aarts, 2007, E 4</td>
<td>Priming awareness</td>
<td>Coactivation of goal and negative affect cause less pursuing</td>
</tr>
<tr>
<td>(inhibited) socialization</td>
<td>EC with negative affect</td>
<td>Speeded questionnaire on desire to attain the goal (going out)</td>
<td>Direct self-report, Continuous behavior</td>
<td>Custers &amp; Aarts, 2007, E 5</td>
<td>Priming awareness</td>
<td>Coactivation of goal and negative affect cause less pursuing</td>
</tr>
<tr>
<td>Forgiving (a goal?)</td>
<td>Subliminal priming of significant or insignificant other</td>
<td>Reporting whether they will forgive 15 wrong behaviors</td>
<td>Direct self-report</td>
<td>Karremans &amp; Aarts, 2007, S1-2</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Pro social behavior</td>
<td>Scrambled with the words spirit, divine, God, sacred, and prophet</td>
<td>Being selfish/less in the dictator game</td>
<td>Choice</td>
<td>Shariff &amp; Norenzayan, 2007, S 1-2</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Justice</td>
<td>Scrambled with the words civic, jury, court, police, and contract</td>
<td>Being selfish/less in the dictator game</td>
<td>Choice</td>
<td>Shariff &amp; Norenzayan, 2007, S 2</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Persistence</td>
<td>Scrambled (but only read the correct sentence to avoid depletion)</td>
<td>Handgrip after depletion</td>
<td>Continuous behavior</td>
<td>Alberts et. al, 2007, S 1</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Persistence</td>
<td>screen saver saying <a href="http://www.you-can-do-it.com">www.you-can-do-it.com</a></td>
<td>Handgrip after depletion + selecting the difficulty level of the final task</td>
<td>Choice</td>
<td>Alberts et. al, 2007, S 2</td>
<td>Priming awareness</td>
<td>Only the handgrip worked. No difference in selection of difficulty level</td>
</tr>
<tr>
<td>Work hard/have fun</td>
<td>Subliminal priming of significant other who holds this goal for the participant</td>
<td>Performance in anagrams</td>
<td>Continuous behavior</td>
<td>Chartrand, Dalton &amp; Fitzsimons, 2006, S1-2</td>
<td>Priming awareness, goal active</td>
<td>In S2, participants high on reactance did the opposite of what the significant other wanted them to do</td>
</tr>
<tr>
<td>Willingness to Self-discloser (not exactly a goal)</td>
<td>Subliminal priming (name of significant other)</td>
<td>Answer a self-discloser index (speed and score)</td>
<td>Indirect self-report</td>
<td>Gilath et. al, 2006, E 1</td>
<td>Priming awareness</td>
<td>E 3 only measured accessibility</td>
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<tr>
<td>Seek support in time of need</td>
<td>Subliminal priming (name of significant other)</td>
<td>Answer a self-discloser index (speed and score)</td>
<td>Indirect self-report</td>
<td>Gilath et. al, 2006, E 2</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Competition (or maybe achievement)</td>
<td>Word-search puzzle</td>
<td>Find uses for coat hanger</td>
<td>Continuous behavior</td>
<td>Stajkovic et. al, 2006, S 1</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Competition (or maybe achievement)</td>
<td>Scrambled</td>
<td>Find uses for coat hanger</td>
<td>Continuous behavior</td>
<td>Stajkovic et. al, 2006, S 2</td>
<td>none</td>
<td>In S 2, there was also explicit manipulation of an achievement goal</td>
</tr>
<tr>
<td>Be combative vs. accommodating</td>
<td>Subliminal priming</td>
<td>Writing notes about another person’s story</td>
<td>Continuous behavior</td>
<td>Oettingen et. al, 2006</td>
<td>none</td>
<td>Measured mood when the goal pursuit was unconscious</td>
</tr>
<tr>
<td>Preparing to interact with gay men</td>
<td>Subliminal priming</td>
<td>Hostility when told they have to take the study again</td>
<td>Continuous behavior</td>
<td>Cesario, Plaks &amp; Higgins, 2006, S 1</td>
<td>none</td>
<td>The preparing part is their claim</td>
</tr>
<tr>
<td>Preparing to interact with elderly people</td>
<td>Subliminal priming (with pictures)</td>
<td>Walking slowly</td>
<td>Continuous behavior</td>
<td>Cesario, Plaks &amp; Higgins, 2006, S 2</td>
<td>none</td>
<td>The preparing part is their claim (3 only measured accessibility). Qualified by liking old folks.</td>
</tr>
<tr>
<td>Help</td>
<td>Prime flood victims pictures presented for 180ms in LDT</td>
<td>Donations to Amnesty International and taking home information material.</td>
<td>Choice</td>
<td>Jonas &amp; Sassenberg, 2006</td>
<td>none</td>
<td>Social category</td>
</tr>
<tr>
<td>Study</td>
<td>Joystick: pull study words and push temptation words</td>
<td>Intention to spend time on studying</td>
<td>Direct self-report</td>
<td>Fishbach &amp; Shah, 2006, S 4</td>
<td>Priming awareness, goal desirability</td>
<td></td>
</tr>
<tr>
<td>Diet</td>
<td>Joystick: pull health words and push fatty words</td>
<td>Food choice (healthy vs. fatty)</td>
<td>Choice</td>
<td>Fishbach &amp; Shah, 2006, S 5</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Study Type</td>
<td>Scrambled Description</td>
<td>Emotion Regulation vs. Expression</td>
<td>Continuous Behavior</td>
<td>Reference</td>
<td>Priming Awareness</td>
<td></td>
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<tr>
<td>Emotion Regulation vs. expression</td>
<td>Scrambled (e.g., “restrains,” “stable, covered” vs. “impulsively,” “volatile,” and “boiled”)</td>
<td>Anger after an annoying task</td>
<td>Continuous behavior</td>
<td>Mauss et. al, 2006, S 1</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>System justification</td>
<td>Scrambled (“Effort leads to prosperity”, “Judge people on merit”, “Rich people deserve it.”)</td>
<td>Blaming themselves when rejected by a higher status group (men)</td>
<td>Continuous behavior</td>
<td>McCoy &amp; Major, 2006, S 1</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>System justification</td>
<td>Scrambled (“Effort leads to prosperity”, “Judge people on merit”, “Rich people deserve it.”)</td>
<td>Perceiving sexism when reading about discrimination</td>
<td>Continuous behavior</td>
<td>McCoy &amp; Major, 2006, S 2</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Autonomy or impersonal orientations motivation</td>
<td>Scrambled</td>
<td>Escapism construed as reported desire to: (1) go to sleep, (2) leave the study, (3) smoke a cigarette, and (4) drink alcohol</td>
<td>Indirect self-report</td>
<td>Hodgins et. al, 2006, S 1</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Autonomy or impersonal orientations motivation</td>
<td>Scrambled</td>
<td>Internal vs. external attribution of failure.</td>
<td>Indirect self-report</td>
<td>Hodgins et. al, 2006, S 2</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Autonomy or impersonal orientations motivation</td>
<td>Scrambled</td>
<td>self-handicapping about rowing performance (really, they rowed)</td>
<td>Hodgins et. al, 2006, S 3</td>
<td>Priming awareness</td>
<td></td>
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</tr>
<tr>
<td>Cleaning</td>
<td>Scent</td>
<td>Planning to clean today</td>
<td>Direct self-report</td>
<td>Holland et. al, 2005, S2</td>
<td>Priming awareness, goal desirability</td>
<td>The point was social categories who primed goals</td>
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<tr>
<td>Helping</td>
<td>Subliminal priming of nurses</td>
<td>Providing feedback about the task (number of words, amount of time)</td>
<td>Continuous behavior</td>
<td>Aarts et. al, 2005, S1</td>
<td>Priming awareness, goal active</td>
<td>The point was social categories who primed goals</td>
</tr>
<tr>
<td>Earning money</td>
<td>scrambles sentences with “stockbrokers”</td>
<td>mouse-click time to get to the lottery</td>
<td>Continuous behavior</td>
<td>Aarts et. al, 2005, S1</td>
<td>Priming awareness, goal setting, goal active, goal pursuit</td>
<td>The point was social categories who primed goals</td>
</tr>
<tr>
<td>Doing puzzles, studying, changing one's clothes, writing, going for a walk, and moving house</td>
<td>EC</td>
<td>rate desire to engage in the activity</td>
<td>Direct self-report</td>
<td>Custers &amp; Aarts, 2005, S1</td>
<td>Priming awareness, goal desirability</td>
<td></td>
</tr>
<tr>
<td>Doing puzzles, studying, changing one's clothes, writing, going for a walk, and moving house</td>
<td>EC</td>
<td>rate desire to engage in the activity</td>
<td>Direct self-report</td>
<td>Custers &amp; Aarts, 2005, S2a</td>
<td>Priming awareness, goal desirability</td>
<td></td>
</tr>
<tr>
<td>Doing puzzles, studying, changing one's clothes, writing, going for a walk, and moving house</td>
<td>EC</td>
<td>rate desire to engage in the activity</td>
<td>Direct self-report</td>
<td>Custers &amp; Aarts, 2005, S2c</td>
<td>Priming awareness, goal desirability</td>
<td></td>
</tr>
<tr>
<td>Doing number-sequence puzzles</td>
<td>EC</td>
<td>Mouse click to get to the puzzle</td>
<td>Continuous behavior</td>
<td>Custers &amp; Aarts, 2005, S3</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Doing number-sequence</td>
<td>EC</td>
<td>Mouse click to get to the puzzle</td>
<td>Continuous behavior</td>
<td>Custers &amp; Aarts, 2005, S4</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>puzzles</td>
<td>Cooperation vs. independence (and control)</td>
<td>Scrambled</td>
<td>Reporting feeling better when a manipulation (music) was said to make people better</td>
<td>Continuous behavior</td>
<td>Geers et. al, 2005, S 1</td>
<td>Priming awareness</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
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<td>-----------------</td>
</tr>
<tr>
<td>Cooperation or independence (or none)</td>
<td>Reading a passage about a helpful person</td>
<td>Reported desire to help</td>
<td>Direct self-report</td>
<td>Geers et. al, 2005, S 2 pilot</td>
<td>Goal desirability</td>
<td>Priming awareness</td>
</tr>
<tr>
<td>Cooperation</td>
<td>Reading a passage about a helpful person</td>
<td>Reporting sleeping better when a manipulation was said to improve sleep</td>
<td>Indirect self-report</td>
<td>Geers et. al, 2005, S 2</td>
<td>Priming awareness</td>
<td>Tested the role of motivation in placebo effect</td>
</tr>
<tr>
<td>Cooperation</td>
<td>Reading a passage about a helpful person</td>
<td>Reporting sleeping worse when a manipulation was said to hurt sleep</td>
<td>Indirect self-report</td>
<td>Geers et. al, 2005, S 3</td>
<td>Priming awareness</td>
<td>Tested the role of motivation in placebo effect</td>
</tr>
<tr>
<td>Cooperation</td>
<td>Scrambled</td>
<td>Showing effects of caffeine inline with what the researcher would expect (including blood pressure)</td>
<td>Indirect self-report</td>
<td>Geers et. al, 2005, S 4</td>
<td>Priming awareness</td>
<td>Tested the role of motivation in placebo effect</td>
</tr>
<tr>
<td>Cooperation</td>
<td>Scrambled</td>
<td>Reporting more relaxation after music, if know that’s the point of the study</td>
<td>Indirect self-report</td>
<td>Geers et. al, 2005, S 5</td>
<td>Priming awareness</td>
<td>Tested the role of motivation in placebo effect</td>
</tr>
<tr>
<td>Socializing</td>
<td>Questionnaire about going out</td>
<td>Choosing a voucher for coffee or beer</td>
<td>Choice</td>
<td>Sheeran et. al, 2005, S 3</td>
<td>None</td>
<td>S 1-2 measured only accessibility of drinking</td>
</tr>
<tr>
<td>Being fast</td>
<td>Word-search puzzle</td>
<td>Puzzles from Weschler Intelligence scale</td>
<td>Continuous behavior</td>
<td>Sheeran et al., 2005</td>
<td>Priming awareness</td>
<td>Only found interaction between implementation intentions and prime</td>
</tr>
<tr>
<td>Helping</td>
<td>Questions about the stereotype of superheroes</td>
<td>Self-report likelihood, compared to the average student, to offer a seat in a subway to a an old lady</td>
<td>Direct self-report</td>
<td>Nelson &amp; Norton, 2004, S 1a</td>
<td>Priming awareness, Goal desirability</td>
<td>Superman was used as a contrast prime (causing less helping, as found by Aarts and Ap in social category priming)</td>
</tr>
<tr>
<td>Helping</td>
<td>Scrambled</td>
<td>Self-report likelihood, compared to the average student, to help an old man in need</td>
<td>Direct self-report</td>
<td>Nelson &amp; Norton, 2004, S 1b</td>
<td>Goal desirability</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Helping</td>
<td>Questions about the stereotype of superheroes</td>
<td>Planned volunteering (number of hours)</td>
<td>Indirect self-report</td>
<td>Nelson &amp; Norton, 2004, S 2</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Helping</td>
<td>Questions about the stereotype of superheroes</td>
<td>Planned volunteering (number of hours)</td>
<td>Indirect self-report</td>
<td>Nelson &amp; Norton, 2004, S 3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Weight watching / Food enjoyment</td>
<td>Questions about the goal</td>
<td>Rating emotions felt when eating 6 different foods</td>
<td>Indirect self-report</td>
<td>Fishbach et al., 2004, S 3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Competition (though primed by businessmen objects)</td>
<td>Objects (images in S 1-3 or the actual objects in S 4)</td>
<td>Decision in Prisoner (S 5) and the ultimatum game (S 3-4)</td>
<td>Choice</td>
<td>Kay et. al, 2004, S 3</td>
<td>Priming awareness</td>
<td></td>
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<tr>
<td>Competition (though primed by businessmen objects)</td>
<td>Objects (images in S 1-3 or the actual objects in S 4)</td>
<td>Decision in Prisoner (S 5) and the ultimatum game (S 3-4)</td>
<td>Choice</td>
<td>Kay et. al, 2004, S 4</td>
<td>Priming awareness</td>
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<td>Competition (though primed by businessmen objects)</td>
<td>Objects (images in S 1-3 or the actual objects in S 4)</td>
<td>Decision in Prisoner (S 5) and the ultimatum game (S 3-4)</td>
<td>Choice</td>
<td>Kay et. al, 2004, S 5</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Earning money</td>
<td>Read about someone’s summer plan (to work)</td>
<td>Speed in tasks to increase the probability to get to the money-rewarding task</td>
<td>Continuous behavior</td>
<td>Aarts et al, 2004, S 1</td>
<td>Priming awareness, goal setting, goal active, goal pursuit</td>
<td></td>
</tr>
<tr>
<td>Seek casual sex</td>
<td>Read about someone asking</td>
<td>Amount of feedback to a female experimenter</td>
<td>Continuous behavior</td>
<td>Aarts et al, 2004, S 2-4</td>
<td>Priming awareness, goal setting, goal active, goal pursuit</td>
<td></td>
</tr>
<tr>
<td>Seek casual sex</td>
<td>Read about someone asking may he come in, after walking an acquaintance home</td>
<td>Reported speeded desire to: “making a pass at someone” and “making love to someone”</td>
<td>Direct self-report</td>
<td>Aarts et al, 2004, S 5</td>
<td>Priming awareness, goal desirability</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Achievement/learning</td>
<td>Reading about people who could either learn or achieve</td>
<td>Projection: Saying what the character is going to do next</td>
<td>Continuous behavior</td>
<td>Kawada et al, 2004, S 1</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td>Scrambled + negative/positive feedback on performance in a competition</td>
<td>Projection: Saying what two players in the prisoner dilemma game are going to do in the next 5 moves</td>
<td>Continuous behavior</td>
<td>Kawada et al, J2004, S 2</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td>Scrambled + negative/positive feedback on performance in a competition</td>
<td>Projection: Saying what two players in the prisoner dilemma game are going to do in the next 5 moves</td>
<td>Continuous behavior</td>
<td>Kawada et al, J2004, S 3</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Motivation: autonomous vs. heteronomous.</td>
<td>Scrambled</td>
<td>Self-reported enjoyment from word-search puzzles (intrinsic motivation subscale, interest-enjoyment)</td>
<td>Indirect self-report</td>
<td>Levesque &amp; Pelletier, 2003, 1</td>
<td>Priming awareness, goal desirability</td>
<td></td>
</tr>
<tr>
<td>Competition/cooperation</td>
<td>Scrambled</td>
<td>Prisoner dilemma</td>
<td>Choice</td>
<td>Kay &amp; Ross, 2003</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Affiliation</td>
<td>Subliminal priming (affiliate, friend, partner, and together)</td>
<td>Mimicry</td>
<td>Continuous behavior</td>
<td>Lakin &amp; Chartrand, 2003</td>
<td>Priming awareness</td>
<td></td>
</tr>
<tr>
<td>Solving</td>
<td>Subliminal</td>
<td>Persistence and performance</td>
<td>Continuous</td>
<td>Shah &amp; Kruglanski,</td>
<td>Priming awareness</td>
<td></td>
</tr>
</tbody>
</table>

may he come in, after walking an acquaintance home

Seek casual sex

Achievement/learning

Competition

Competition

Motivation: autonomous vs. heteronomous.

Motivation: autonomous vs. heteronomous.

Competition/cooperation

Affiliation

Solving

Persistence and performance

Continuous

Shah & Kruglanski,

Priming awareness
<table>
<thead>
<tr>
<th>Activity</th>
<th>Description                                                                 °</th>
<th>Measure</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anagrams</strong></td>
<td>presentation of the name of the strategy to complete this goal</td>
<td>in the anagram task</td>
<td>behavior</td>
</tr>
<tr>
<td><strong>Solving Anagrams</strong></td>
<td>Subliminal presentation of a color association with the task/goal</td>
<td>Persistence and performance in the anagram task</td>
<td>Continuous behavior</td>
</tr>
<tr>
<td><strong>Solving object-use task</strong></td>
<td>Subliminal presentation of a color association with the task/goal</td>
<td>Persistence and performance in the anagram task (inverse relationship to the prime)</td>
<td>Continuous behavior</td>
</tr>
<tr>
<td><strong>Self-generated</strong></td>
<td>Subliminal priming of the significant other (mom/fried) who holds this goal about/for the participants</td>
<td>self-reported focus on attaining the goal, how frequently they would try to attain this goal</td>
<td>Direct self-report</td>
</tr>
<tr>
<td><strong>possess analytical reasoning skill</strong></td>
<td>Subliminal priming of father</td>
<td>Performance and persistence in anagrams said to be related to analytical reasoning, and also self-reported goal commitment, and also accessibility of the goal</td>
<td>Continuous behavior, Direct self-report</td>
</tr>
<tr>
<td><strong>Helping</strong></td>
<td>questionnaire about either a friend (prime) or co-worker (control)</td>
<td>Agreeing to do another study</td>
<td>Choice</td>
</tr>
<tr>
<td><strong>Succeed in school</strong></td>
<td>Questionnaire about mom</td>
<td>Projection on a character in a story’s motivation to succeed in school</td>
<td>Continuous behavior</td>
</tr>
<tr>
<td><strong>Succeed in school</strong></td>
<td>Questionnaire about mom</td>
<td>Projection on a character in a story’s motivation to succeed in school</td>
<td>Continuous behavior</td>
</tr>
<tr>
<td><strong>Finding out the reason of other person’s name</strong></td>
<td>Subliminal priming of the friend’s name</td>
<td>Overcoming the fundamental attribution error when reading about someone</td>
<td>Continuous behavior</td>
</tr>
</tbody>
</table>

Priming awareness, goal desirability

Was an alternative goal interfering with task measured
<table>
<thead>
<tr>
<th>behavior</th>
<th>Questionnaire</th>
<th>generate as many unique words as they could</th>
<th>Continuous behavior</th>
<th>Fitzsimons &amp; Bargh, 2003, S 4</th>
<th>Priming awareness, goal active</th>
</tr>
</thead>
<tbody>
<tr>
<td>To make one's mother proud</td>
<td>Magazine left in the room (about chocolate or fitness)</td>
<td>Choose between an apple and Twix bar</td>
<td>Choice</td>
<td>Fishbach, Friedman, &amp; Kruglanski, 2003</td>
<td>Priming awareness</td>
</tr>
<tr>
<td>Diet vs. fattening food vs. control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning</td>
<td>Scent</td>
<td>Cleanliness when eating a biscuit</td>
<td></td>
<td>Holland et. al, 2005, S 3</td>
<td>Priming awareness, goal setting, goal active, goal pursuit</td>
</tr>
<tr>
<td>Being competent</td>
<td>Scrambled</td>
<td>Some kind of shared-resources game</td>
<td>Choice</td>
<td>Uts et. al, 2004, S 1-2</td>
<td>Priming awareness</td>
</tr>
<tr>
<td>Competition</td>
<td>Word-search puzzle</td>
<td>Performance solving word-search puzzles</td>
<td>Continuous behavior</td>
<td>Bargh et. al, 2001, S 1</td>
<td>Priming awareness</td>
</tr>
<tr>
<td>Cooperation</td>
<td>Word-search puzzle</td>
<td>Shared resource game (fish)</td>
<td>Choice</td>
<td>Bargh et. al, 2001, S 2</td>
<td>Priming awareness, goal setting, goal active, goal pursuit</td>
</tr>
<tr>
<td>Competition</td>
<td>Word-search puzzle</td>
<td>Performance solving word-search puzzles</td>
<td>Continuous behavior</td>
<td>Bargh et. al, 2001, S 3</td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td>Word-search puzzle</td>
<td>Continuing working after the time is up</td>
<td>Choice</td>
<td>Bargh et. al, 2001, S 4</td>
<td>Priming awareness</td>
</tr>
<tr>
<td>Competition</td>
<td>Word-search puzzle</td>
<td>Choosing to complete a game other than judging comic movies</td>
<td>Choice</td>
<td>Bargh et. al, 2001, S 5</td>
<td>Priming awareness</td>
</tr>
<tr>
<td>going to the library</td>
<td>Watch a picture of a library for 30s</td>
<td>Talking, measuring their speech volume</td>
<td>Continuous behavior</td>
<td>Aartz &amp; Dijksterhuis, 2000, S 2</td>
<td>Priming awareness</td>
</tr>
<tr>
<td>Going to exclusive restaurant</td>
<td>picture of a restaurant + going there</td>
<td>Cleanliness when eating a biscuit</td>
<td>Continuous behavior</td>
<td>Aartz &amp; Dijksterhuis, 2000, S 3</td>
<td>Priming awareness</td>
</tr>
<tr>
<td>Helping</td>
<td>???</td>
<td>Help picking up dropped pens</td>
<td>Choice</td>
<td>Macrae &amp; Johnston, 1998, S 1</td>
<td>???</td>
</tr>
<tr>
<td>Helping</td>
<td>???</td>
<td>Help picking up dropped pens</td>
<td>Choice</td>
<td>Macrae &amp; Johnston, 1998, S 2</td>
<td>???</td>
</tr>
<tr>
<td>Being</td>
<td>Imagine a typical</td>
<td>Performance on a trivial</td>
<td>Continuous</td>
<td>Dijksterhuis &amp; van</td>
<td>Priming awareness</td>
</tr>
</tbody>
</table>

**The Confabulated-Self**
<p>| intelligent (probably not. But it is difficult to believe this effect with goal activation) | professor/secretary/ control | pursuit | behavior | Knippenberg, 1998, E 1 | the significantly different condition |
| Being intelligent (probably not) | Imagine a typical professor/ control | Performance on a trivial pursuit | Continuous behavior | Dijksterhuis &amp; van Knippenberg, 1998, E 2 | Priming awareness | Did not find decay of the prime |
| Being intelligent (probably not) | Imagine a soccer hooligans | Performance on a trivial pursuit | Continuous behavior | Dijksterhuis &amp; van Knippenberg, 1998, E 3 | Priming awareness |
| Being intelligent (probably not) | Imagine a professor vs. soccer hooligans / think about the concept of intelligence vs. stupidity | Performance on a trivial pursuit | Continuous behavior | Dijksterhuis &amp; van Knippenberg, 1998, E 4 | Priming awareness |
| Being impolite (does not construed as a goal) | Scrambled | Interrupting the experimenter’s conversation (time) | Choice | Bargh, Chen &amp; Burrows, 1996, E 1 | Priming awareness |
| Old age (according to Higgins: preparing to interact with one) | Scrambled | Walking slowly | Continuous behavior | Bargh, Chen &amp; Burrows, 1996, E 2a | Priming awareness | 2b was a complete replication of 2a |
| Old age (according to Higgins: preparing to interact with one) | Scrambled | Walking slowly | Continuous behavior | Bargh, Chen &amp; Burrows, 1996, E 2b | Priming awareness | 2b was a complete replication of 2a |
| African | Subliminal priming | Hostility (rated by the | Continuous | Bargh, Chen &amp; | Priming awareness |</p>
<table>
<thead>
<tr>
<th>Americans (Higgins might say: preparing to interact with one)</th>
<th>of faces experimenter) after a computer error</th>
<th>behavior</th>
<th>Burrows, 1996, E 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>impression formation or a memory-processing goal</td>
<td>Scrambled</td>
<td>Clustering in remember details about a person</td>
<td>Continuous behavior</td>
</tr>
<tr>
<td>priming awareness, goal setting, goal pursuit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>impression formation or control</td>
<td>Subliminal</td>
<td>Type of impressions formed (on line vs. memory based), and recall effect related to impression formation</td>
<td>Continuous behavior</td>
</tr>
<tr>
<td>Priming awareness, goal setting, goal pursuit</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>