Published in final edited form as:
Self Identity. 2013 April ; 12(2): 114–127. doi:10.1080/15298868.2011.639550.

Self-Awareness Without Awareness? Implicit Self-Focused Attention and Behavioral Self-Regulation

Paul J. Silvia and
Department of Psychology, University of North Carolina at Greensboro

Ann G. Phillips
Department of Psychology, Huntingdon College.

Abstract

Objective self-awareness theory contends that focusing attention on the self initiates an automatic comparison of self to standards. To gain evidence for automatic self–standard comparison processes, two experiments manipulated attention to self with subliminal first-name priming. People completed a computer-based parity task after being instructed that the standard was to be fast or to be accurate. Subliminal first name priming increased behavioral adherence to the explicit standard. When told to be fast, self-focused people made more mistakes and had faster response times; when told to be accurate, self-focused people made fewer mistakes. A manipulation of conscious self-awareness (via a mirror) had the same self-regulatory effects. The findings suggest that comparing self to standards can occur automatically and that it is attention to self, not awareness of the self per se, that evokes self-evaluation.

Keywords

self-focused attention; self-awareness; self-regulation; priming; automaticity

The capacity for self-awarenessis one source of the enormous complexity in human thought and action: people can represent the self abstractly, think about their thoughts and experience, and judge their ideas and actions in light of abstract goals and standards (Carver, 2003). The social psychology of self-awareness was started by objective self-awareness theory (Duval & Wicklund, 1972; Wicklund & Duval, 1971), which examines the cognitive, motivational, and affective consequences of focusing attention on the self. Many experiments since Duval and Wicklund's influential book have shown that self-focused attention has important implications for motivation and self-regulation (for reviews see Carver, 2003; Duval & Silvia, 2001; Gibbons, 1990; Silvia & Duval, 2001a).

Of the many effects of self-focused attention, two are most widely known. First, focusing attention on the self can lead to *conscious awareness* of the self. People begin to have conscious thoughts about the self, and they experience a subjective sense of self-consciousness (Silvia & Gendolla, 2001). Duval and Wicklund (1972) labeled this state "objective self-awareness." Second, focusing attention on the self leads to a process of*self-evaluation*. Duval and Wicklund assumed that self-evaluation consisted of comparing the self to a standard of correctness that specifies a state the self ought to have.

Please address correspondence to: Paul J. Silvia Department of Psychology P. O. Box 26170 University of North Carolina at Greensboro Greensboro, NC, 27402-6170 Phone (336) 256-0007 Fax (336) 334-5066 p_silvia@uncg.edu.

Many experiments support objective self-awareness theory's predictions about the role of self-focused attention in initiating self-evaluation (see Carver & Scheier, 1998; Duval & Silvia, 2001; Silvia & Duval, 2004). Manipulating self-focused attention—such as with mirrors, video cameras, and observers—increases many affective and behavioral markers of self-evaluation. For example, high self-focus leads people to compare self to standards (Gibbons, 1978; Hormuth, 1982; Scheier & Carver, 1983), to mobilize effort to meet their standards (Gendolla, Richter, & Silvia, 2008; Silvia, Jones, Kelly, & Zibaie, 2011a; Silvia, McCord, & Gendolla, 2010), to feel better after succeeding and worse after failing (Duval & Silvia, 2002; Ickes, Wicklund, & Ferris, 1973), and to respond defensively when success is unlikely (Duval & Lalwani, 1999; Duval & Silvia, 2002; Silvia & Duval, 2001b).

A long-standing question in self-awareness research is whether conscious awareness of the self is necessary for self-evaluation to occur. Objective self-awareness theory maintains that the dynamics of self-evaluation can operate automatically, in the sense of occurring quickly and unintentionally(see Duval & Silvia, 2001; Silvia & Duval, 2001a, pp. 237-238). Certainly, people can deliberately reflect on the self and evaluate it relative to their personal standards. But according to the theory, self-evaluation needn't be intentional and deliberate. If attention is directed to self, the self will automatically be compared to standards, and attention can be directed to self-knowledge without a conscious experience of self-awareness. Attention is routinely allocated in the absence of awareness of its target, such as in early-stage object identification and vigilance for masked objects (e.g., Lachter, Forster, & Ruthruff, 2004; McCormick, 1997; Mogg & Bradley, 1999), so attention to self needn't require conscious awareness of the self.

Despite the theory's claims that self-evaluation processes can occur automatically, research hasn't yet tested its predictions. Automatic comparison of self and standards seems intuitively plausible, but there is no direct evidence that the dynamics of self-evaluation assumed by the theory—attention to self initiates a comparison of self against standards—can operate without using obvious, conscious reminders of the self. Furthermore, there is no solid indirect evidence that can be mustered from the literature on self-awareness. The standard manipulations of self-focused attention—placing people in front of mirrors (Carver & Scheier, 1978), showing people their images on TV monitors (Silvia & Phillips, 2004), introducing observers (Carver & Scheier, 1978), and making people aware that they stick out in some way (Silvia & Eichstaedt, 2004; Snow, Duval, & Silvia, 2004)—affect self-focused attention in ways that induce conscious awareness of the self. Thus, direct tests of automatic self-evaluation are required.

Assuming that self-evaluation can occur either deliberately or automatically, how are they similar? Theories of self-evaluation vary regarding the relationship between automatic and controlled self-evaluation. The dual-evaluation model, for example, proposes that “implicit and explicit self-evaluations represent two qualitatively different kinds of self-evaluation” (Koole, Dijksterhuis, & van Knippenberg, 2001, p. 670). Automatic self-evaluation is primarily associationistic (Dijksterhuis, 2004), whereas controlled evaluation involves “sophisticated cognitive judgments of the self” (Koole et al., 2001, p. 670). Regarding outcomes, automatic self-evaluation processes affect implicit self-esteem, and conscious self-evaluation processes affect explicit self-esteem (see also Bosson, Brown, Zeigler-Hill, & Swann, 2003).

Objective self-awareness theory, in contrast, assumes that automatic and controlled self-evaluation processes have some important qualitative similarities (Duval & Silvia, 2001). Automatic and controlled self-evaluation processes aren't similar in all respects, of course, but they should share some antecedents and consequences. Comparing self to its goals and standards is a central mechanism in human behavior control (Carver & Scheier, 1981, 1998), so it ought to be robust, versatile, and applicable across a wide range of inputs, goals, and contexts. If the comparison and regulation processes happened only when both self and goals were in conscious awareness, then the self-regulatory system would have relatively limited control over action. Thus, the core processes of self-evaluation—attention to self initiates comparing self to a standard—should be similar regardless of whether the processes unfold in or out of awareness.

The Present Experiments

The present experiments examined objective self-awareness theory's predictions about automatic aspects of the self-evaluation process.In two experiments, we manipulated attention to self outside of awareness via subliminal first-name priming (Experiments 1 and 2) or consciously with a mirror (Experiment 2), and we presented people with an explicit and obvious standard for behavior. In particular, we capitalized on the well-known speed–accuracy tradeoff in cognitive tasks, in which aiming for speed produces more errors and aiming for accuracy produces slower responses. Some participants were told the standard was to be fast; others were told the standard was to be accurate. As a result, patterns of response times and errors can reveal behavioral adherence to the speed and accuracy standards.

Experiment 1

Method

Participants and Design—A total of 89 people (66 women, 23 men) enrolled in General Psychology at the University of North Carolina at Greensboro (UNCG) participated and received credit toward a research option. Each person was randomly assigned to condition in a 2 (Self-Focus: First-Name Priming vs. No Priming) by 2 (Explicit Standard: Speed vs. Accuracy) between-person design.

Procedure—People completed the study individually. The experimenter explained that the study was about how people process information in the face of minor distractions. The task was a computer-based parity task (Wolford & Morrison, 1980), which presents a word flanked by two numbers (e.g., 2 JACKET 3). People must ignore the word and decide if the two numbers have the same parity (both odd or both even) or a different parity (one odd, one even). This awkward task has a high rate of errors because the required categorization is unfamiliar and because the response mapping (i.e., “both odd” and “both even” on one key, “one odd, one even” on the other) competes against the intuitive “odd versus even” mapping.

People received a sheet that described the task and contained the standard manipulation. The standard for the task was manipulated by explicitly instructing participants that they ought to opt for speed over accuracy (speed condition; e.g., “The standard that you should try to meet is to respond *as fast as possible*”) or accuracy over speed (accuracy condition; e.g., “The standard that you should try to meet is to respond *as accurately as possible*”). The experimenter orally reiterated the standard before the task.

Self-focused attention was manipulated with subliminal first-name priming. Participants were told that they would see brief flashes of different letters, presumably as part of the study's interest in performance despite minor distractions. After a 1000 ms pause, each trial began with a fixation cross (250 ms) followed by the prime (27 ms), which was either the participant's first name (first-name priming condition) or a random-letter string (no priming condition). The prime was followed by a random-letter mask for 100 ms, which was followed by the parity trial. The parity problem remained on the screen until the participant responded. The parity task consisted of 8 practice trials followed by 6 blocks of 16 trials (8 same parity, 8 different parity). Responses were measured with a Cedrus RB-620 response pad, which has a timing accuracy of 1 ms.After completing the task, people completed a brief questionnaire and had a funneled debriefing that asked about awareness of the name prime. No participants reported seeing their first-name.

A two-group pretest ($n = 32$) suggested that this priming method successfully raises self-focused attention. Relative to random-letter priming, first-name priming significantly increased scores on the Linguistic Implications Form (LIF; Wegner & Giuliano, 1980, 1983), Mann-Whitney $Z = 2.16$, $p = .031$, a scale that measures self-focus via how often people complete ambiguous sentences with first-person singular pronouns.The LIF is one of the most widely-used measures of state self-focus (Abele, Silvia, & Zöller-Utz, 2005; Salovey, 1992; Silvia & Abele, 2002; Silvia & Eichstaedt, 2004; Silvia, Phillips, Baumgaertner, & Maschauer, 2006; Snow et al., 2004). Notably, first-name priming didn't affect positive or negative affect (both Fs < 1), measured with the PANAS (Watson, Clark, & Tellegen, 1988), so the effects of priming were specific to self-focused attention and consistent with our expectation that priming wouldn't affect conscious moods.[1]

In addition, past research suggests that first-name priming successfully increases self-focused attention. In a study of mental control, Macrae, Bodenhausen, and Milne (1998) found that presenting people's last names for 30 ms influenced the self-regulation of social stereotypes in the same manner as conventional self-awareness manipulations. In a recent study, presenting people's first names for 27 ms during a cognitive task significantly increased cardiovascular markers of effort (Silvia et al., 2011a), which suggests greater attempts to meet the task's standard.

Results and Discussion

Errors—Did subliminal first-name priming influence self-regulation to the explicit standard? A repeated-measures ANOVA estimated the effects of the priming and standard manipulations across the 6 blocks of trials; the effect for blocks was modeled via a 1-*df* within-person contrast for linear change across blocks. This analysis revealed a significant three-way interaction between priming, standard, and block, $F(1, 85) = 7.94$, $p = .006$. Regarding lower-order effects, there were significant main effects of the standard manipulation, $F(1, 85) = 20.56$, $p < .001$, and block, $F(1, 85) = 23.18$, $p < .001$. The priming main effect ($F < 1$), the block-by-priming interaction ($F < 1$), and the block-by-standard interaction, $F(1, 85) = 2.45$, $p = .122$, were not significant. Table 1 shows the results for each condition.

Figure 1 depicts the significant three-way interaction. As expected, first-name priming increased adherence to the standard, particularly on the earlier trials. When people had an explicit standard to be fast, first-name priming significantly increased the number of errors for the first two blocks. When people had an explicit standard to be accurate, however, first-name priming significantly reduced the number of errors for the first and third blocks.

Response Times—A similar repeated-measures ANOVA estimated the effects on response times across the 6 blocks. This analysis revealed a significant three-way interaction between priming, standard, and block, $F(1, 85) = 3.94$, $p = .050$. Regarding lower-order effects, there were significant main effects of the standard manipulation, $F(1, 85) = 43.42$, $p < .001$, and block, $F(1, 85) = 20.12$, $p < .001$, and a marginal main effect of priming, F(1,

[1]It's worth noting that the original theory proposed that the state of objective self-awareness was aversive (Duval & Wicklund, 1972), but later research soon modified this claim in light of contrary evidence (e.g., Ickes et al., 1973; Wicklund, 1975). As a result, we wouldn't expect a manipulation of self-focused attention to necessarily affect PA or NA.

85) = 3.42, $p = .068$. Neither the block-by-priming interaction ($F < 1$) nor the block-by-standard interaction, $F(1, 85) = 1.71$, $p = .195$, was significant. Table 1 shows the results for each condition.

Figure 2 depicts the significant three-way interaction. When people had an explicit standard to be fast, first-name priming significantly reduced response times. In particular, people in the first-name priming condition were significantly faster early in the task: the effect of priming diminished across the blocks, becoming non-significant for the fifth and sixth blocks. When people had an explicit standard to be accurate, however, first-name priming didn't influence response times relative to no priming.

Summary—As expected, directing attention to self implicitly, via subliminal first-name priming, influenced behavioral self-regulation to a conscious, explicit standard. People in the first-name priming condition performed in a manner that reflected attempts to adhere to the standard. When told the standard was speed, they had faster response times and more errors; when told the standard was accuracy, they made fewer errors.

Experiment 2

In Experiment 2, we explored the similarity of nonconscious and conscious influences on self-focused attention by adding a mirror condition to the design. Presenting people with their reflection is a classic way of evoking self-focused attention, and it evokes conscious thoughts about the self and a subjective sense of feeling self-consciousness(Govern & Marsch, 2001; Ickes, Layden, & Barnes, 1978). Theories of self-awareness predict similar effects for conscious and nonconscious sources of self-focus (Carver & Scheier, 1998; Duval & Silvia, 2001b). Both activate self-regulatory processes aimed at reducing discrepancies, so both should have similar effects on behavioral regulation to an explicit standard.

Participants and Design

A total of 164 people (111 women, 51men, and 2 who declined to respond) enrolled in General Psychology at UNCG participated as part of a research option. Each person was randomly assigned to condition in a 3 (Self-Focus: First-Name Priming vs. Mirror vs. Control) by 2 (Standard: Speed vs. Accuracy) between-person design.

Procedure

The task and procedures were the same as in Experiment 1, except that we added a condition in which self-focused attention was manipulated with a mirror. In the mirror condition, people faced a 24″ by 36″ mirror placed on the desk. Unlike the first study, the monitor was angled so people could see the mirror throughout the task. In the first-name priming condition and the control condition, people faced the mirror's non-reflective back side. The experimenters justified the mirror by noting that they were borrowing the room and had been asked not to move anything. This method is one of the oldest (Carver & Scheier, 1978; Wicklund & Duval, 1971) and most commonly-used manipulations of self-awareness (Phillips & Silvia, 2005; Silvia, 2002a, 2002b).

The parity task was the same as in Experiment 1. After a 1000 ms pause, each trial began with a fixation cross (250 ms) followed by the prime (27 ms), which was either the participant=s first name (First-Name Priming Condition) or a random-letter string (Mirror Condition and No Priming Condition). The prime was followed by a random-letter mask (100 ms) and then the parity trial, which remained onscreen until the participant responded. The task started with 8 practice trials and then 6 blocks of 16 trials (8 same parity, 8 different parity). Responses were measured with a Cedrus RB-843 response pad, which has a timing accuracy of 1 ms. No participants reported seeing their first-name during the funneled debriefing.

Results and Discussion

Errors—Did the priming and mirror manipulations of self-awareness have similar effects on behavioral self-regulation? A repeated-measures ANOVA examined the effects of the self-focus and standard manipulations on errors across the 6 blocks; as before, the effect of blocks was modeled via a within-person contrast for linear change across the 6 blocks. The three-way interaction was not significant, $F < 1$, but the self-focus by standard interaction was, $F(2, 158) = 7.63$, $p < 001$. Regarding other effects, there were significant main effects of block, $F(1, 158) = 18.83$, $p < .001$, and standards, $F(1, 158) = 35.74$, $p < .001$, as well as significant interactions between standard and block, $F(1, 158) = 4.56$, $p = .034$, and self-focus and block, $F(2, 158) = 4.32$, $p = .015$. Table 2 displays the results for each condition.

Figure 3 depicts the significant two-way self-focus-by-standard interaction. As expected, both first-name priming and the mirror increased adherence to the performance standard. When the standard was to be fast, people in the mirror ($t(52) = 2.93$, $p = .005$) and name priming ($t(53) = 2.37$, $p = .021$) conditions made significantly more errors than people in the control condition. When the standard was to be accurate, people in the mirror ($t(53) = 1.96$, $p = .055$) and the name priming ($t(52) = 2.09$, $p = .042$) conditions made significantly fewer errors than people in the control condition.

Response Times—A similar repeated-measures ANOVA was conducted on response times across the 6 blocks. This analysis revealed a significant three-way interaction between self-focus, standards, and block, $F(2, 158) = 4.30$, $p = .015$. Regarding lower-order effects, there were main effects of block, $F(1, 158) = 83.32$, $p < .001$, and standard, $F(1, 158) = 4.32$, $p = .015$, and two-way interactions between block and self-focus, $F(2, 158) = 3.23$, $p = .042$, and block and standard, $F(1, 158) = 12.36$, $p < .001$. Table 2 displays the results for each condition.

Figure 4 depicts the pattern of effects. When the standard was to be fast, people in the name priming and mirror conditions were significantly faster than people in the control condition for the first block; as in Experiment 1, the effect diminished across the remaining blocks. When the standard was to be accurate, the self-focus manipulation didn't systematically affect response times.

Summary—Experiment 2 found evidence for the similarity of conscious and nonconscious sources of self-focused attention. As in Experiment 1, manipulating speed–accuracy standards caused corresponding shifts in errors and response times when people were self-focused. First-name priming and a mirror caused similar patterns of behavioral self-regulation to an explicit standard, which suggests that they evoke the same self–standard comparison processes.

General Discussion

The comparison of self to goal states is a fundamental mechanism of behavior control (Carver & Scheier, 1981, 1998), so it ought to be versatile—it should execute effectively across a wide range of conditions and inputs. Past work has shown, for example, that this system can operate with diverse kinds of standards, such as goals at different levels of abstraction, concreteness, and modes of representation (Carver, 2003; Carver & Scheier, 1998). Self-focused attention, a core mechanism that activates the comparison of self with standards, appears to be similarly versatile. Directing attention to self explicitly (via a mirror) and implicitly (via first-name priming) had similar effects on behavioral regulation to an explicit standard. The dynamics of self-regulation were thus similar, suggesting that this is not a self-process that differs qualitatively across the implicit–explicit dimension.

These findings enhance our understanding of the dynamics proposed by objective self-awareness theory, which was developed before social psychology's interest in automatic and implicit processes. The theory presumes that focusing attention on the self initiates a comparison of self against standards, and that this comparison is difficult to prevent, control, or disrupt (Silvia & Duval, 2001a). The outcomes may typically be conscious, such as self-critical thoughts, negative affect, and reduced state self-esteem, but the comparison process itself is presumed to operate automatically. The present research shows that this process can be evoked by directing attention to self outside of awareness and by presenting people with conscious self-images. These results support the theory's view that it is attention, not awareness per se, that initiates comparative processes (see also Carver & Scheier, 1981).

Our experiment used an uncommon task standard—be fast or be accurate—relative to past self-awareness research. The standards used in past work typically involved instructing people to “do their best,” such as to come as close as possible to a feared object (Carver, Blaney, & Scheier, 1979) orto get as many items right within a time limit (e.g., Duval & Lalwani, 1999). Other studies have used fixed-difficulty standards, such as responding within a fixed response window (e.g., Gendolla et al., 2008; Silvia, Jones, Kelly, & Zibaie, 2011b). And still other studies have used abstract self-evaluative standards, such as inner representations of close others (Baldwin & Holmes, 1987) or personal ideals (Phillips & Silvia, 2005). Speed and accuracy standards, while somewhat mundane, allow us to rule out some unlikely alternative explanations, such as the possibility that first name priming facilitates dominant responses, increases arousal or alertness, or activates personal standards that override contextual ones. Because self-focus had opposite effects depending on the standard—some people made more mistakes, others made fewer mistakes—it seems likely that self-focus was causing behavior to align with the standard.

The effects of self-focused attention—via both priming and mirrors—decayed across the six blocks of the task. Both experiments found strongest effects earlier in the task, and the conditions tended to converge toward the end of the task. There are many reasons why task performance changes across blocks of long cognitive tasks. Some are more interesting for cognitive psychologists than for self researchers—such as more efficient motor mapping with practice and the shift from computing to remembering answers—but others might represent interesting directions for future research. For example, the effects of name priming could decay due to habituation to the prime(which was presented for 100% of the trials; Silvestrini & Gendolla, 2011) or to absorption of attention in the challenging cognitive task. Likewise, the effects of the explicit standards probably decayed due to goal neglect (Kane & Engle, 2003), the tendency for a task goal (in the present experiments, “be fast” or “be accurate”) to slip from one's mind as people become immersed in the rapid cognitive task. It would be interesting for future work to vary the proportion of primed trials and to vary the reinstatement of the task goal, such as through reminders or goal-relevant priming, to evaluate their influence on the time course of behavioral self-regulation.

In both studies, error rates were more sensitive than response times to the manipulations. Both speed and accuracy standards caused shifts in errors, but only the speed standard caused systematic shifts in response times. This pattern may offer clues to the self-regulation strategies that were adopted during the task. Errors can be reduced by adopting a caution strategy, in which people insert an additional error-evaluation stage into the response process (e.g., Knowles & Delaney, 2005). This straightforward strategy is effective and easy to adopt, which probably explains the large differences in errors for self-focused and nonself-focused participants as well as the overall rise in response times. For response speed, in contrast, no similarly effective strategy is available—people can simply try to expend more effort (Gendolla et al., 2008; Silvia et al., 2010), which will increase performance somewhat despite the large influence of individual differences in the cognitive abilities relevant to the challenging parity task. An interesting direction for future work would be take a more fine-grained look at the self-regulatory strategies that self-focused people adopt, such as whether self-focus increases the likelihood of seeking a strategy, how effectively and consistently people apply it, and if people are aware of their task strategies.

Acknowledgments

This research was supported by award number R03MH073571 from the National Institute of Mental Health. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Mental Health or the National Institutes of Health. We thank Amy Alves, Craig Clement, Daniel McCord, Jenna McGowan, and Larissa Rimkevicius for assisting with data collection. Some of the findings were presented at the annual meetings of the Midwestern Psychological Association and the Society of Southeastern Social Psychologists.

References

Abele AE, Silvia PJ, Zöller-Utz I. Flexible effects of positive mood on self-focused attention. Cognition and Emotion. 2005; 19:623–631.

Baldwin MW, Holmes JG. Salient private audiences and awareness of the self. Journal of Personality and Social Psychology. 1987; 52:1087–1098.

Bosson JK, Brown RP, Zeigler-Hill V, Swann WB Jr. Self-enhancement tendencies among people with high explicit self-esteem: The moderating role of implicit self-esteem. Self and Identity. 2003; 2:169–187.

Carver, CS. Self-awareness.. In: Leary, MR.; Tangney, JP., editors. Handbook of self and identity. Guilford; New York: 2003. p. 179-196.

Carver CS, Blaney PH, Scheier MF. Focus of attention, chronic expectancy, and responses to a feared stimulus. Journal of Personality and Social Psychology. 1979; 37:1186–1195. [PubMed: 490310]

Carver CS, Scheier MF. Self-focusing effects of dispositional self-consciousness, mirror presence, and audience presence. Journal of Personality and Social Psychology. 1978; 36:324–332.

Carver, CS.; Scheier, MF. Attention and self-regulation. Springer; New York: 1981.

Carver, CS.; Scheier, MF. On the self-regulation of behavior. Cambridge University Press; New York: 1998.

Dijksterhuis A. I like myself but I don't know why: Enhancing implicit self-esteem by subliminal evaluative conditioning. Journal of Personality and Social Psychology. 2004; 86:345–355. [PubMed: 14769089]

Duval TS, Lalwani N. Objective self-awareness and causal attributions for self-standard discrepancies: Changing self or changing standards of correctness. Personality and Social Psychology Bulletin. 1999; 25:1220–1229.

Duval, TS.; Silvia, PJ. Self-awareness and causal attribution: A dual systems theory. Kluwer Academic; Boston: 2001.

Duval TS, Silvia PJ. Self-awareness, probability of improvement, and the self-serving bias. Journal of Personality and Social Psychology. 2002; 82:49–61. [PubMed: 11811633]

Duval, TS.; Wicklund, RA. A theory of objective self awareness. Academic Press; New York: 1972.

Gendolla GHE, Richter M, Silvia PJ. Self-focus and task difficulty effects on cardiovascular reactivity. Psychophysiology. 2008; 45:653–662. [PubMed: 18282201]

Gibbons FX. Sexual standards and reactions to pornography: Enhancing behavioral consistency through self-focused attention. Journal of Personality and Social Psychology. 1978; 36:976–987.

Gibbons FX. Self-attention and behavior: A review and theoretical update. Advances in Experimental Social Psychology. 1990; 23:249–303.

Govern JM, Marsch LA. Development and validation of the situational self-awareness scale. Consciousness and Cognition. 2001; 10:366–378. [PubMed: 11697870]

Hormuth SE. Self-awareness and drive theory: Comparing internal standards and dominant responses. European Journal of Social Psychology. 1982; 12:31–45.

Ickes W, Layden MA, Barnes RD. Objective self-awareness and individuation: An empirical link. Journal of Personality. 1978; 46:146–161. [PubMed: 650377]

Ickes WJ, Wicklund RA, Ferris CB. Objective self awareness and self esteem. Journal of Experimental Social Psychology. 1973; 9:202–219.

Kane MJ, Engle RW. Working-memory capacity and the control of attention: The contributions of goal neglect, response competition, and task set to Stroop interference. Journal of Experimental Psychology: General. 2003; 132:47–70. [PubMed: 12656297]

Knowles ME, Delaney PF. Lasting reductions in illegal moves following increasing their cost: Evidence from river-crossing problems. Journal of Experimental Psychology: Learning, Memory, & Cognition. 2005; 31:670–682.

Koole SL, Dijksterhuis A, van Knippenberg A. What's in a name: Implicit self-esteem and the automatic self. Journal of Personality and Social Psychology. 2001; 80:669–685. [PubMed: 11316229]

Lachter J, Forster KI, Ruthruff E. Forty-five years after Broadbent (1958): Still no identification without attention. Psychological Review. 2004; 111:880–913. [PubMed: 15482066]

Macrae CN, Bodenhausen GV, Milne AB. Saying no to unwanted thoughts: Self-focus and the regulation of mental life. Journal of Personality and Social Psychology. 1998; 74:578–589. [PubMed: 9523406]

McCormick PA. Orienting attention without awareness. Journal of Experimental Psychology: Human Perception and Performance. 1997; 23:168–180. [PubMed: 9157183]

Mogg K, Bradley BP. Orienting of attention to threatening facial expressions presented under conditions of restricted awareness. Cognition and Emotion. 1999; 13:713–740.

Phillips AG, Silvia PJ. Self-awareness and the emotional consequences of self-discrepancies. Personality and Social Psychology Bulletin. 2005; 31:703–713. [PubMed: 15802664]

Salovey P. Mood-induced self-focused attention. Journal of Personality and Social Psychology. 1992; 62:699–707. [PubMed: 1583593]

Scheier MF, Carver CS. Self-directed attention and the comparison of self with standards. Journal of Experimental Social Psychology. 1983; 19:205–222.

Silvestrini N, Gendolla GHE. Don't prime too much: Prime frequency effects of masked affective stimuli on effort-related cardiovascular response. Biological Psychology. 2011; 87:195–199. [PubMed: 21543147]

Silvia PJ. Self-awareness and emotional intensity. Cognition and Emotion. 2002a; 16:195–216.

Silvia PJ. Self-awareness and the regulation of emotional intensity. Self and Identity. 2002b; 1:3–10.

Silvia PJ, Abele AE. Can positive affect induce self-focused attention? Methodological and measurement issues. Cognition and Emotion. 2002; 16:845–853.

Silvia PJ, Duval TS. Objective self-awareness theory: Recent progress and enduring problems. Personality and Social Psychology Review. 2001a; 5:230–241.

Silvia PJ, Duval TS. Predicting the interpersonal targets of self-serving attributions. Journal of Experimental Social Psychology. 2001b; 37:333–340.

Silvia, PJ.; Duval, TS. Self-awareness, self-motives, and self-motivation.. In: Wright, RA.; Greenberg, J.; Brehm, SS., editors. Motivational analyses of social behavior. Lawrence Erlbaum Associates; Mahwah, NJ: 2004. p. 57-75.

Silvia PJ, Eichstaedt J. A self-novelty manipulation of self-focused attention for Internet and laboratory experiments. Behavior Research Methods, Instruments, and Computers. 2004; 36:325–330.

Silvia PJ, Gendolla GHE. On introspection and self-perception: Does self-focused attention enable accurate self-knowledge? Review of General Psychology. 2001; 5:241–269.

Silvia PJ, Jones HC, Kelly CS, Zibaie A. Masked first name priming increases effort-related cardiovascular reactivity. International Journal of Psychophysiology. 2011a; 80:210–216. [PubMed: 21439332]

Silvia PJ, Jones HC, Kelly CS, Zibaie A. Trait self-focused attention, task difficulty, and effort-related cardiovascular reactivity. International Journal of Psychophysiology. 2011b; 79:335–340. [PubMed: 21145360]

Silvia PJ, McCord DM, Gendolla GHE. Self-focused attention, performance expectancies, and the intensity of effort: Do people try harder for harder goals? Motivation and Emotion. 2010; 34:363–370.

Silvia PJ, Phillips AG. Self-awareness, self-evaluation, and creativity. Personality and Social Psychology Bulletin. 2004; 30:1009–1017. [PubMed: 15257785]

Silvia PJ, Phillips AG, Baumgaertner MK, Maschauer EL. Emotion concepts and self-focused attention: Exploring parallel effects of emotional states and emotional knowledge. Motivation and Emotion. 2006; 30:229–235.

Snow CJ, Duval TS, Silvia PJ. When the self stands out: Figure–ground effects on self-focused attention. Self and Identity. 2004; 3:355–363.

Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. Journal of Personality and Social Psychology. 1988; 54:1063–1070. [PubMed: 3397865]

Wegner DM, Giuliano T. Arousal-induced attention to self. Journal of Personality and Social Psychology. 1980; 38:719–726.

Wegner DM, Giuliano T. On sending artifact in search of artifact: Reply to McDonald, Harris, and Maher. Journal of Personality and Social Psychology. 1983; 44:290–293. [PubMed: 6834237]

Wicklund RA. Objective self-awareness. Advances in Experimental Social Psychology. 1975; 8:233–275.

Wicklund RA, Duval TS. Opinion change and performance facilitation as a result of objective self-awareness. Journal of Experimental Social Psychology. 1971; 7:319–342.

Wolford G, Morrison F. Processing of unattended visual information. Memory and Cognition. 1980; 8:521–527.

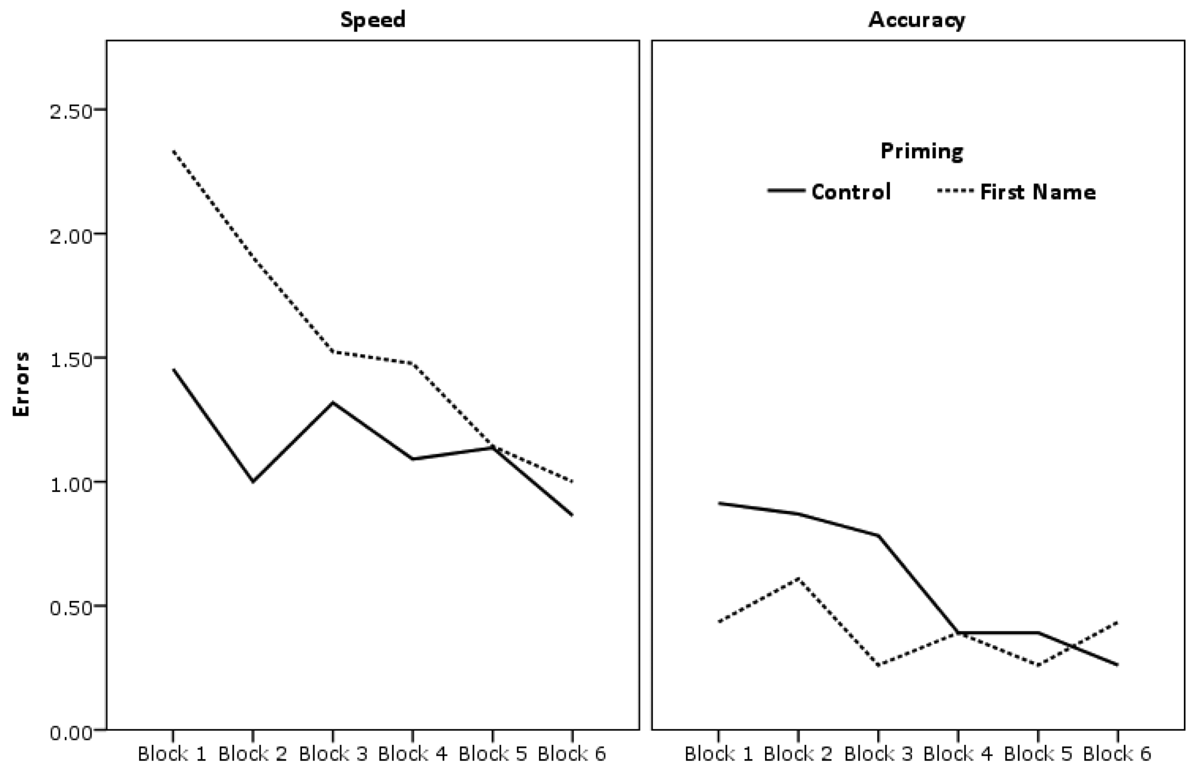

Figure 1.
Effects of first-name priming and explicit standards on errors: Experiment 1.

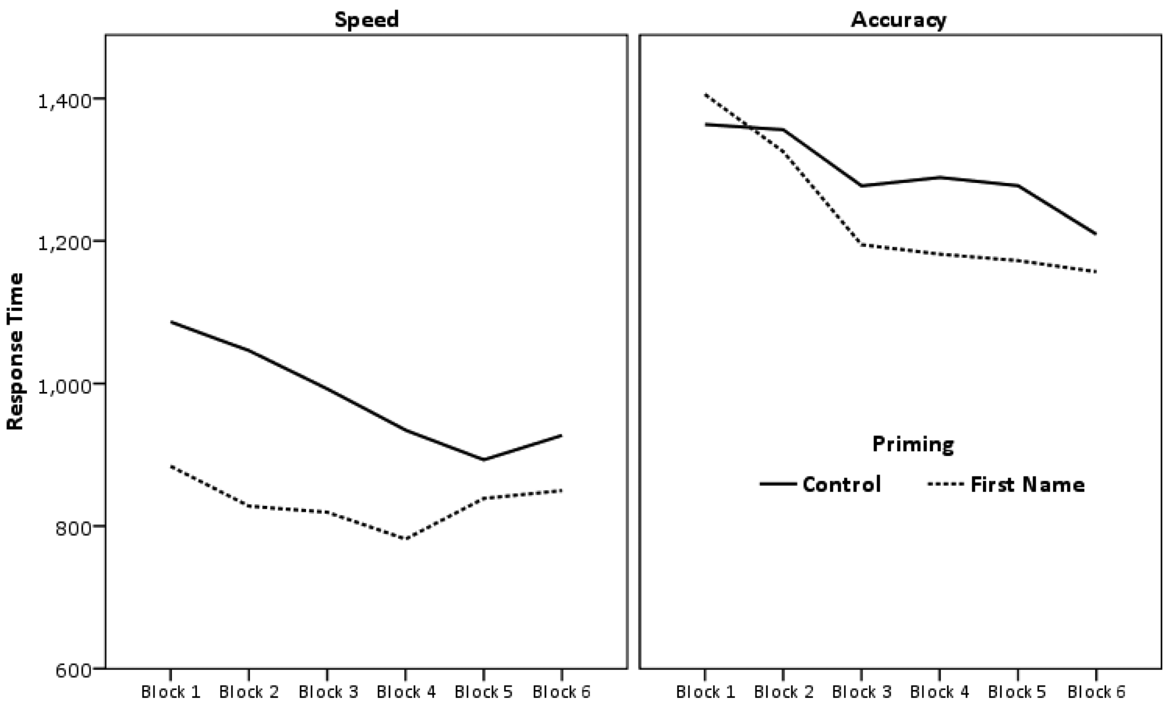

Figure 2.
Effects of first-name priming and explicit standards on response times: Experiment 1.

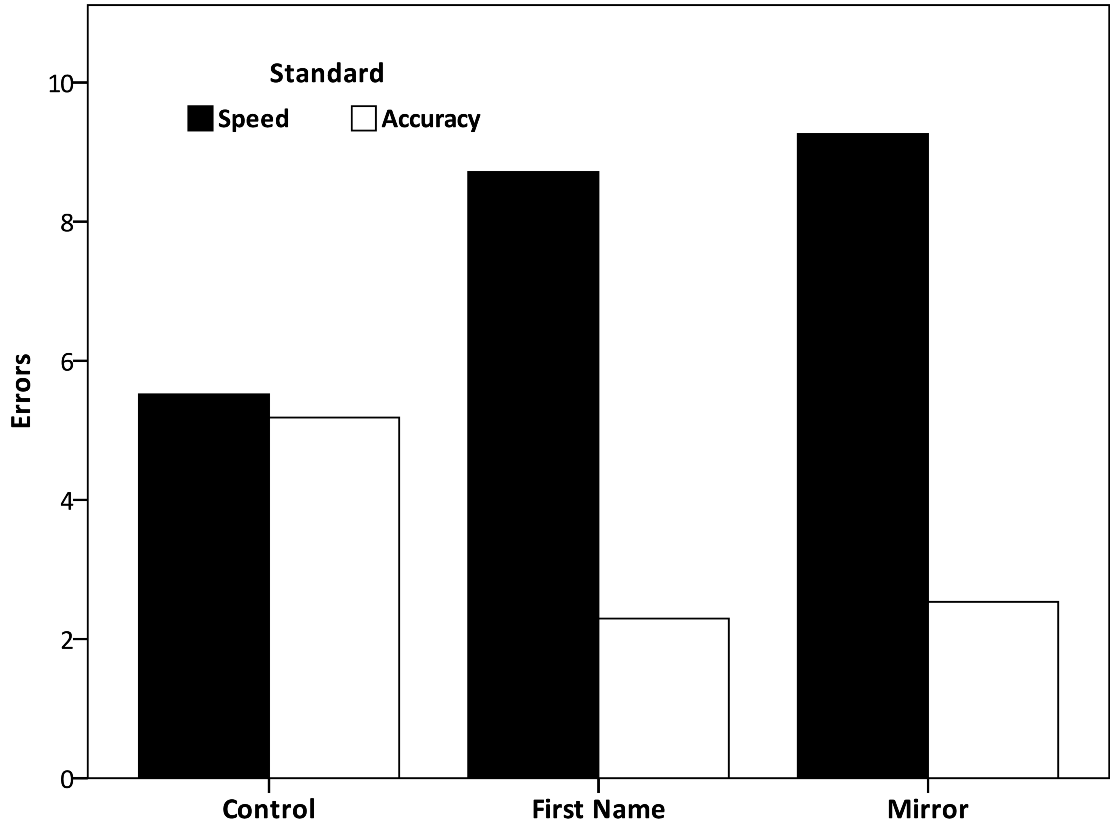

Figure 3.
Effects of self-focus and explicit standards on errors: Experiment 2.

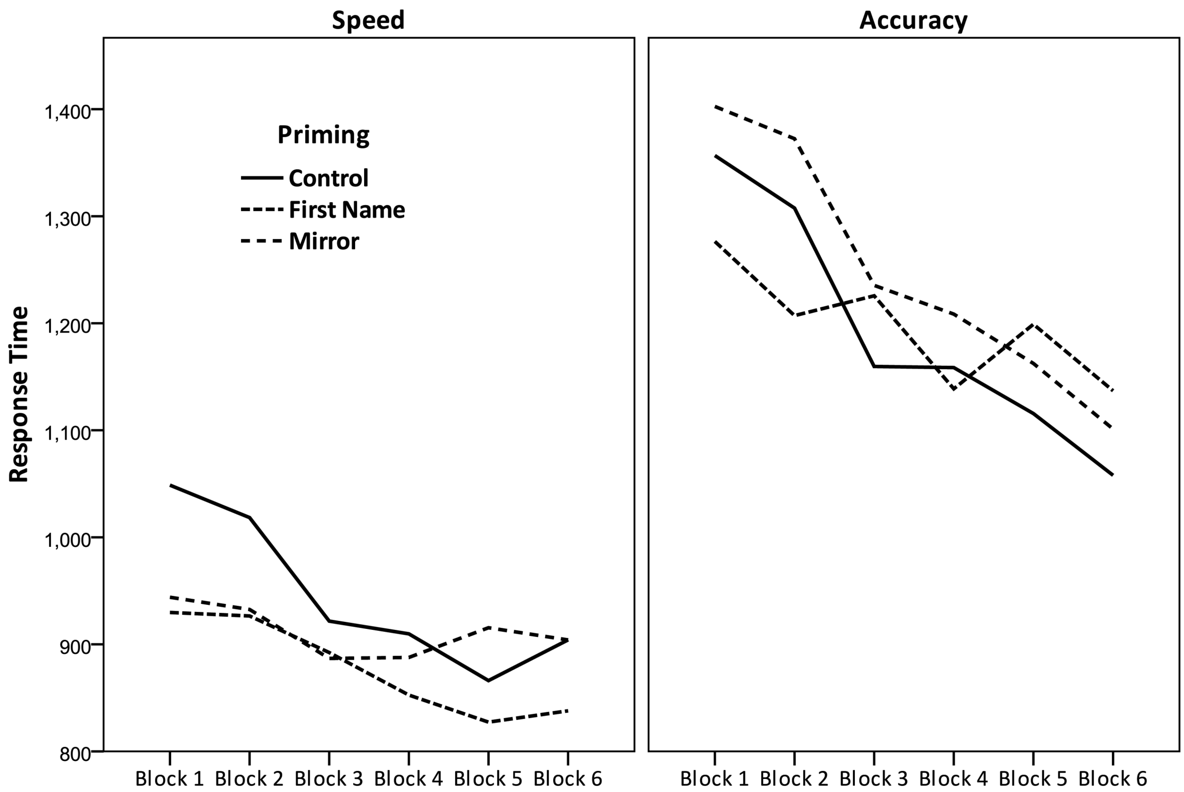

Figure 4.
Effects of self-focus and explicit standards on response times: Experiment 2.

Table 1

Effects of Name Priming and Explicit Standards on Errors and Responses Times: Experiment 1

		Errors					
		Block 1	**Block 2**	**Block 3**	**Block 4**	**Block 5**	**Block 6**
Speed Standard	Name Prime	2.33 (.28)	1.91 (.30)	1.52 (.30)	1.48 (.26)	1.14 (.23)	1.00 (.19)
	Control Prime	1.46 (.28)	1.00 (.29)	1.32 (.30)	1.09 (.25)	1.14 (.22)	.86 (.19)
Accuracy Standard	Name Prime	.44 (.27)	.61 (.29)	.26 (.29)	.39 (.24)	.26 (.22)	.44 (.18)
	Control Prime	.91 (.27)	.87 (.29)	.78 (.29)	.39 (.24)	.39 (.22)	.26 (.18)
		Response Times					
		Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
Speed Standard	Name Prime	884 (69)	828 (62)	819 (64)	781 (63)	838 (66)	849 (66)
	Control Prime	1086 (67)	1046 (61)	992 (62)	935 (62)	893 (65)	927 (64)
Accuracy Standard	Name Prime	1406 (66)	1325 (59)	1195 (61)	1181 (60)	1172 (63)	1156 (63)
	Control Prime	1363 (66)	1356 (59)	1277 (61)	1289 (60)	1277 (63)	1209 (63)

Note. Standard errors are in parentheses. Response times are rounded to the nearest millisecond.

Table 2

Effects of Self-focus and Explicit Standards on Errors and Responses Times: Experiment 2

		Errors					
		Block 1	**Block 2**	**Block 3**	**Block 4**	**Block 5**	**Block 6**
Speed Standard	Mirror	1.82 (.21)	1.74 (.22)	1.70 (.23)	1.29 (.22)	1.59 (.22)	1.11 (.22)
	Name Prime	2.04 (.21)	1.82 (.21)	1.39 (.23)	1.25 (.21)	.93 (.22)	1.29 (.22)
	Control Prime	1.26 (.21)	1.00 (.22)	.83 (.23)	.52 (.22)	.79 (.22)	1.11 (.22)
Accuracy Standard	Mirror	.79 (.21)	.39 (.21)	.39 (.23)	.29 (.21)	.32 (.22)	.36 (.22)
	Name Prime	.63 (.21)	.44 (.22)	.59 (.23)	.15 (.22)	.29 (.22)	.185 (.22)
	Control Prime	.85 (.21)	.67 (.22)	.89 (.23)	.79 (.22)	1.18 (.22)	.82 (.22)
		Response Times					
		Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
Speed Standard	Mirror	944 (71)	933 (68)	887 (65)	888 (62)	916 (64)	904 (57)
	Name Prime	930 (70)	927 (67)	892 (64)	853 (61)	827 (63)	838 (56)
	Control Prime	1049 (71)	1018 (68)	922 (65)	910 (62)	866 (64)	904 (57)
Accuracy Standard	Mirror	1402 (70)	1372 (67)	1235 (64)	1208 (61)	1162 (63)	1101 (56)
	Name Prime	1276 (71)	1207 (68)	1226 (65)	1139 (62)	1199 (64)	1137 (57)
	Control Prime	1357 (71)	1308 (68)	1160 (65)	1159 (62)	1116 (64)	1058 (57)

Note. Standard errors are in parentheses. Response times are rounded to the nearest millisecond.