



The association between self-deception and moral self-concept as functions of self-consciousness

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ABSTRACT

Regulated by self-consciousness, self-deception is a part of the self-system that suppresses negative aspects of the self and maintains a positive moral self-concept. We tested this evolutionary hypothesis on 166 college students by measuring self-deception using both a questionnaire and a series of hypothetical helping scenarios. The results showed a positive correlation between self-deception and moral self-concept, which was moderated by private self-consciousness. Among participants with high, but not low, self-consciousness, high moral self-concept individuals were more willing to help when potential self-benefits were present than low moral self-concept individuals, whereas there was no difference between the two groups concerning helping without self-benefit. These results support the evolutionary view that self-deception serves to maintain optimal moral self-concept, especially for individuals with high self-consciousness.

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1. Introduction

Humans are social animals who pursue selfish interests in a cooperative context in which public interests are also observed. There are subsequent conflicts between pursuing self-interests and protecting public interests. Solving and balancing these conflicts has resulted in specific adaptations to group living. On the one hand, various group-oriented socialization processes help to shape the development of moral self-concept among group members that serves to maintain the cooperative group context by curbing selfish interests and promoting public interests. Individuals of high moral self-concept thus behave more altruistically. On the other hand, altruism operates among other adaptive forces, such as deception and self-deception, which allow one to claim or believe to be acting altruistically while actually acting selfishly (Cosmides & Tooby, 2005; Cummins, 1999; von Hippel & Trivers, 2011; Trivers, 1976). In deception, self-interests replace public interests in the conscious mind; in self-deception, self-interests are pushed to the unconscious and the individual is only aware of public interests (Alexander, 1987). The factor regulating deception and self-deception may be self-consciousness, which is the extent to which individuals are inclined and able to examine their inner thoughts and feelings (Fenigstein, Scheier, & Buss, 1975). Low moral self-concept individuals may openly deceive others by maintaining

self-interests in the conscious mind, while high moral self-concept individuals may self-deceive by pushing self-interests to the unconscious. Self-consciousness may serve to regulate these two self-serving strategies. The purpose of the present study is to examine the relations among moral self-concept, self-consciousness, and self-deception in an effort to better understand self-deception within an evolutionary framework.

Unlike philosophers who are concerned about the existence, realization, and intentionality of self-deception (e.g., Davidson, 1985; Demos, 1960; Fingarette, 1969; Mele, 1997), or mainstream psychologists who focus on the mechanism and functionality of self-deception (e.g., Greenwald, 1988; Sackeim, 1983; Paulhus & John, 1998), evolutionary psychologists are interested in how self-deception has evolved as a fitness-enhancing strategy. The evolutionary view holds that self-deception has evolved in an uncongenial world as a result of an “arms race” between deception and deception detection (Trivers, 2000). In human group living, conflicts of interest are present most of the time (Alexander, 1987), and deception has become a ubiquitous strategy to manipulate group members in order to maximize self-interest and exploit public interests (Mitchell, 1986; Trivers, 1985). Detection of deception evolves to guard against personal exploitation and public encroachment. In response, self-deception evolves to escape detection. During deception, maintaining both true and false information in the consciousness while presenting only falsehoods to others results in extra cognitive load for the deceiver (von Hippel & Trivers, 2011). Conscious awareness about the truth may result in the deceiver unintentionally exposing clues about the truth. A self-deceiver keeps only false information in the consciousness

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and leaves no clues about the truth, which is kept in the unconscious, and thus avoids detection completely (Trivers, 2000).

Whereas self-deception was originally construed mainly as an interpersonal strategy to facilitate deception of others (Trivers, 1976, 1985), it also is an intrapersonal variable that, as part of the self-system, entails chronic misrepresentation of the self without immediate or explicit reference to others (Kurzban & Aktipis, 2007; Surbey, 2011; von Hippel & Trivers, 2011). In such a self-directed and deceptive state of mind, a person may selectively access certain information about, and deny other information to, the self in ways that convince both the self and others of aggrandized self-presentations (Greenwald, 1988; Paulhus & Reid, 1991). Intrapersonal self-deception therefore continues to serve the interpersonal goal of deceiving others (von Hippel & Trivers, 2011). Consistent with the interpersonal origin of self-deception, preferential access to, and misrepresentation of, different aspects of the self are fashioned by active interpersonal interactions within a group context that informs the individual of his/her fitness conditions, including cooperation needs and opportunities. Often referred to as self-enhancement in morality or altruism (Paulhus & John, 1998), intrapersonal self-deception is self-serving because it facilitates and maintains cooperative relationships with other group members (Surbey, 2004; Surbey & McNally, 1997). Individuals are more inclined to be altruistic if they are unaware of the selfish intentions of themselves and others (Nesse & Lloyd, 1992; Surbey, 2011). By the same logic, congenial altruism suppresses selfishness and engenders altruism in others, which actuates and perpetuates reciprocal altruism and cooperative group living (Alexander, 1987).

As part of the self-system that emphasizes prioritizing, representing, and misrepresenting different aspects of the self (Markus & Wurf, 1987), intrapersonal self-deception contributes to the development and maintenance of self-concept (Greenwald, 1980; Sedikides & Skowronski, 1997), specifically the moral or altruistic aspects of self-concept relevant to social interactions and group living. Being altruistic and unselfish, and seeing others behaving likewise, is a core feature of socialization in most societies (Keller, Edelstein, Krettenauer, Fu-xi, & Ge, 2005). This socialization, in turn, shapes and reinforces individuals' self-concept, specifically the moral self-concept. Intrapersonal self-deception is thus vital to self-concept because it enables or facilitates the internalization of group or altruistic values that help form an individual's moral self-concept. Thus, there is a functional association between moral self-concept and self-deception; regarding oneself highly in terms of morality and altruism necessitates that negative and selfish aspects of the self are inaccessible, and this is achieved through self-deception. In this respect, self-deception is necessary for, and instrumental to, the development and maintenance of moral self-concept. In other words, people attaining or maintaining high moral ground may be more self-deceptive and, thus, more successful in suppressing selfish thoughts, whereas people of low moral self-concept view themselves in less-than-optimal moral light because they are not inclined to deceive themselves about their selfish thoughts.

Whether or not self-deception is used to maintain high moral ground may depend on one's ability to attend to inner thoughts and feelings, including the morally undesirable aspects of the self. Such self-consciousness, especially private self-consciousness, may serve to regulate self-deception. Highly self-conscious individuals are more aware of their inner self (Fenigstein et al., 1975), including blemishes in their moral self-conception. To maintain the same level of moral self-concept, these individuals will require more intrapersonal self-deception to suppress moral imperfections. In contrast, the moral self-concept of those low in self-consciousness may depend less on self-deception because they are less aware of their inner selves, including selfish thoughts and moral impurities. Thus, increasing self-consciousness may increase the strength of the correlation between moral self-concept and self-deception.

To test the hypothesis that self-deception facilitates the maintenance of moral self-concept by suppressing negative aspects of the self, the present study examined the associations among self-deception (SDE), moral self-concept (MSC), and self-consciousness (SC). We hypothesized a positive correlation between moral self-concept and self-deception. We also expected MSC–SDE association to be stronger among high, rather than low, self-conscious individuals. In addition to examining questionnaire measures, we also included another measure of self-deception by having subjects respond to different helping scenarios from which we derived two helping intention variables – altruistic helping intention without self-benefit and self-deceived helping intention with potential self-benefit. We hypothesized that among high SC individuals, those high in MSC would score higher on self-deceived helping intention than those low on MSC, whereas among low SC individuals, there would be no difference between high and low MSC groups.

2. Method

2.1. Participants

One hundred sixty-six undergraduate students (76 males, *mean age* = 20.54, *SD* = 2.44) from a college in southern China participated in the study. They filled out questionnaires for monetary reward. The questionnaires included measures of self-deception, impression management, moral self-concept, and self-consciousness as well as four scenarios that recorded helping intention.

2.2. Measurements

2.2.1. Self-deception

The Self-Deception Enhancement (SDE) subscale from the Balanced Inventory of Desirable Response (BIDR; Paulhus, 1991) was used to measure self-deception. The 20-item SDE measures sincere beliefs in desirable self-descriptions (Paulhus, 1991). Sample items include “I am fully in control of my own fate,” and “I never regret my decision.” Rated on a 7-point scale (1 for *not true at all*, 7 for *completely true*), higher scores indicate self-deceptive tendency to see oneself in a positive light. The internal consistency reliability estimate was $\alpha = .66$ in the present study.

2.2.2. Impression management

Impression management was measured by the 20-item Impression management (IM) subscale of the BIDR (Paulhus, 1991). In contrast to the SDE that measures positive views of one's beliefs, the IM measures the social favorability of one's public image. Sample items include “I always declare everything at customs,” and “I have never dropped litter on the street.” The rating scale and scoring for the IM were the same as those for the SDE. In this study, the internal consistency reliability estimate was $\alpha = .75$. Because IM and SDE are highly correlated, we included both measures to better gauge self-deception.

2.2.3. Self-consciousness

SC was measured by the 9-item private self-consciousness subscale of the Self-Consciousness Scale (Scheier & Carver, 1985). The SC measures one's awareness of personal and covert aspects of the self. Sample items include “I am always trying to figure myself out,” and “I am aware of my inner thoughts.” The SC is rated on a 4-point scale ranging from 0 (“not at all like me”) to 3 (“a lot like me”) with higher scores indicating more self-consciousness. The internal consistency reliability estimate for SC was $\alpha = .67$.

2.2.4. Moral self-concept

The morality subscale of the Six-Factor Self-Concept Scale was used to measure moral self-concept (Stake, 1994). It consists of six adjectives related to morality (i.e., loyal, truthful, law-abiding, faithful, trustworthy, and honest). Participants indicated, on a 7-point-scale, how accurately each adjective described them (1 for never true of me, 7 for always true of me). The internal consistency reliability estimate was $\alpha = .85$ for this test.

2.2.5. Helping intention: Altruistic helping intention without self-benefit and self-deceived helping intention with potential self-benefit

Participants were presented with scenarios in which their altruistic help was sought by an acquaintance. The participants were instructed to imagine themselves in each scenario and indicate, on a 7-point scale (0 = not going to help, 6 = help with all my heart), their willingness to help the acquaintance. Each scenario had two conditions: In the first, the participant may potentially benefit from the helping behavior, while in the second condition, there is no potential self-benefit. In both conditions the outcome for the acquaintance was the same. For example, in one scenario, the participant's help was sought to spend 30 min to fetch a package from the mailroom for a classmate who was not on campus at the time. In the potential benefit condition, the participant was said to have missed some lectures for which the classmate had taken good notes. In the no-benefit condition, the participant was said to not have taken any common classes with the classmate. Each participant responded to both conditions, with and without potential self-benefit, for each helping scenario with the order of the two conditions counterbalanced across participants. Averaging over each of the two conditions across scenarios creates two variables measuring the extent of altruistic helping intention without self-benefit and the extent of self-deceived helping intention with potential self-benefit.

3. Results

3.1. Moral self-concept and self-consciousness in relation to self-deception

Table 1 reports means, standard deviations, and correlations between the variables used in the study. The correlation between moral self-concept (MSC) and self-deception (SDE) is of particular interest. As expected, this correlation ($r = .37$) is robust and statistically significant ($p < .001$). To examine the moderating effect of self-consciousness (SC) on the MSC–SDE association, we conducted multiple regression analysis using the $MSC \times SC$ interaction as a predictor. We standardized all variables and computed an interaction variable by multiplying MSC with SC. We then performed a regression on SDE using MSC, SC, and the multiplicative term as predictor variables. The results showed that MSC ($\beta = .32$, $p < .001$) and $MSC \times SC$ interaction ($\beta = .14$, $p < .05$) significantly

Table 1 Mean and SD and correlation of the examined variables.

	MSC	SDE	IM	SC
Moral self-concept (MSC)				
Self-deception (SDE)	.37***			
Impression management (IM)	.50***	.47***		
Self-consciousness (SC)	.34***	.26***	.17*	
Mean	34.72	5.27	6.91	18.56
SD	5.07	3.26	3.70	3.82
Possible range	6–42	0–20	0–20	0–27
Actual range	15–42	0–16	0–16	9–27

* $p < .05$.
*** $p < .001$.

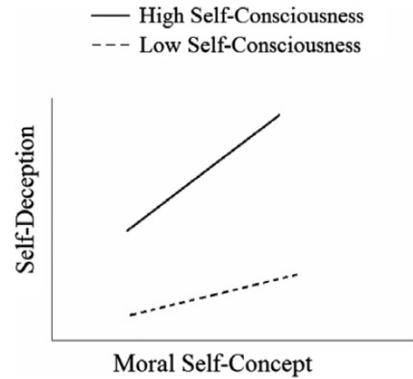


Fig. 1. Regression slopes of moral self-concept on self-deception at 1SD above and 1SD below the mean of self-consciousness.

predicted SDE. To illustrate the interaction effect, we computed and plotted simple slopes (Aiken & West, 1991). As shown in Fig. 1, regression of SDE on MSC was .46 ($t = 4.42$, $p < .001$) at 1SD above the mean of SC and .18 ($t = 1.97$, $p = .05$) at 1SD below the mean of SC. These results suggest that the positive association between MSC and SDE is strong at high levels of SC and attenuated at low levels of SC. To verify the interaction effect was unique to MSC, we conducted a similar regression analysis testing the interaction between impression management (IM) and SC. This interaction was not statistically significant (Fig. 2). These results support our hypothesis that moral self-concept is positively associated with self-deception and that this association is strengthened or attenuated as a function of self-consciousness. These results are unique in that impression management is highly correlated with self-deception independent of self-consciousness level.

3.2. Moral self-concept and self-consciousness on helping intension

We first compared the two helping intention variables. Overall, participants were more willing to help with potential self-benefit ($M = 5.21$, $SD = .99$) than without self-benefit ($M = 4.97$, $SD = 1.15$; $t(165) = 2.43$, $p < .05$). With mean split, participants were divided into high and low moral self concept (MSC) groups or high and low self-consciousness (SC) groups. We next conducted a 2 (high vs. low MSC) \times 2 (high vs. low SC) MANOVA with the two helping intentions with and without potential self-benefit as the dependent variables. There were significant main effects of MSC ($F(2, 161) = 8.62$, $p < .001$, $\eta^2 = .10$) and SC ($F(2, 161) = 3.71$, $p < .05$, $\eta^2 = .04$) and a marginally significant interaction ($F(2, 161) = 2.44$, $p = .09$, $\eta^2 = .03$). Univariate analyses showed that high

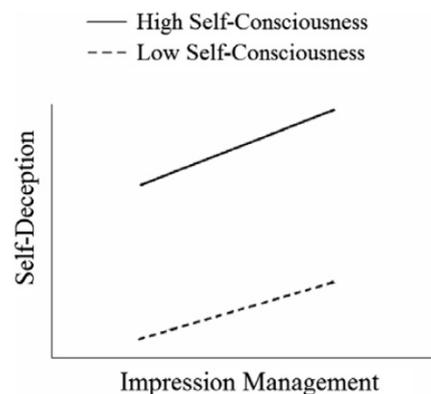


Fig. 2. Regression slopes of impression management on self-deception at 1SD above and 1SD below the mean of self-consciousness.

MSC participants scored higher ($M = 5.37$, $SD = .76$) than low MSC participants ($M = 4.79$, $SD = .87$; $t(164) = 4.51$, $p < .001$) and high SC participants scored higher ($M = 5.32$, $SD = .79$) than low SC participants ($M = 4.86$, $SD = .87$, $t(164) = 3.55$, $p < .01$) on self-deceived altruistic intention with potential self-benefit. Directly relevant to and supportive of our hypothesis, there was a significant interaction between MSC and SC on helping with potential self-benefit ($F(1, 162) = 4.89$, $p < .05$, $\eta^2 = .03$). Among high SC participants, those high on MSC scored higher on self-deceived altruistic intention with potential self-benefit ($M = 5.67$, $SD = .55$) than those low on MSC ($M = 5.03$, $SD = 1.19$; $t(80) = 3.32$, $p < .001$), whereas among low SC participants, there was no difference between high MSC ($M = 4.97$, $SD = 1.06$) and low MSC participants ($M = 5.00$, $SD = 1.03$; $t(82) = .13$, $p = .90$). Also consistent with our hypothesis, there was no significant interaction between MSC and SC on true altruistic intention without self-benefit ($F(1, 162) = .37$, $p = .54$). There was only a significant main effect of MSC ($F(1, 162) = 16.07$, $p < .001$, $\eta^2 = .09$) and a marginally significant main effect of SC ($F(1, 162) = 3.12$, $p = .08$).

To validate these results, we conducted the same 2 (high vs. low MSC) \times 2 (high vs. low SC) ANOVA with SDE as the dependent variable and obtained similar results. There were main effects of MSC ($F(1, 162) = 12.87$, $p < .001$, $\eta^2 = .07$) and SC ($F(1, 162) = 6.92$, $p < .05$, $\eta^2 = .04$). More importantly, there was the significant interaction between MSC and SC ($F(1, 162) = 5.34$, $p < .05$, $\eta^2 = .03$). Among high SC participants, those high on MSC were more self-deceptive ($M = 7.17$, $SD = 3.55$) than those low on MSC ($M = 4.33$, $SD = 2.47$; $t(80) = 3.87$, $p < .001$), whereas among low SC participants, there was no difference on SDE between high MSC ($M = 4.79$, $SD = 3.04$) and low MSC participants ($M = 4.18$, $SD = 2.66$; $t(82) = .98$, $p = .33$). These results validate our experimental measure of helping intention as another indicator of self-deception.

4. Discussion

Within an evolutionary framework, we examined self-deception in relation to moral self-concept, self-consciousness, and altruistic intention. As hypothesized, moral self-concept was positively correlated with self-deception, and this association was moderated by self-consciousness. Specifically, moral self-concept was more strongly associated with self-deception among high rather than low self-conscious individuals. This moderating effect was replicated when using an experimental measure of helping intention with potential self-benefit. Among individuals of high self-consciousness, those of high moral self-concept were more willing to help only when helping behavior was associated with potential self-benefit. In contrast, among those with low self-consciousness, helping behavior did not differ as a function of moral self-concept. These findings are consistent with existing studies. For example, people actually donate much lower amounts to charities than they initially plan (Epley & Dunning, 2000), and 95% of people provide affirmative answers when asked whether it is morally good to assign an easy task to a partner and leave oneself a difficult task, but when asked to actually assign the tasks by tossing a coin, only 10% of the participants assign the partner the easy task (Batson, Kobryniewicz, Dinnerstein, Kampf, & Wilson, 1997).

The positive correlation between moral self-concept and self-deception and the functional effect of self-consciousness in moderating this association conform to the evolutionary account of morality and self-deception. Moral self-concept registers one's concern for others' interests or altruism, whereas self-deception helps to conceal self-interests (Alexander, 1987; Krebs, 1998). Thus, a higher concern for public interests either causes or is caused by a stronger need to hide self-interests. These co-variations are adaptive

because they reduce the conflict between an individual's pursuit of one's own fitness enhancement and the safeguarding of public interests that benefit all group members. High self-conscious individuals are more likely to be aware of aspects about the self, including selfish attitudes, motivation, and intentions (Echebarria & Valencia, 1994). When interacting with high moral self-concept, these selfish motivations and attitudes increase conflict between selfishness and awareness of public and altruistic interests. Among these individuals high in self-consciousness, we have therefore observed a stronger co-variation between moral self-concept and self-deception, which, as both a personality attribute and a state of mind or behavioral intention, may serve to better balance the conflict between public- and self-interests.

Formed through socialization, moral self-concept represents internalized public interests (Aquino & Reed, 2002) that serve to consciously curb excessive pursuit of self-interests (Alexander, 1987; Krebs, 1998). Self-deception, on the one hand, serves to deceive one's conscious mind (Mitchell, 2000) by relegating self-interests to the unconscious. The positive correlation between moral self-concept and self-deception suggests that, as more conscious curbing is exercised due to high moral self-concept, there is more blocking of the conscious representation of self-interest by self-deception. On the other hand, when there is little conscious curbing of self-interest due to low moral self-concept, selfishness can be consciously pursued, negating the need for self-deception. The factor regulating the expression of one of the two contingent relations is self-consciousness that, by making one aware of the negative or selfish aspects of the inner self, makes self-deception particularly necessary to block out selfish aspects. In the context of the present findings, we can speculate that high moral self-concept individuals are more likely to engage in self-serving behaviors unconsciously and that low moral self-concept individuals are more likely to engage in self-serving behaviors openly. Self-consciousness may serve to adjust these two types of self-interest pursuits. By hiding selfish thoughts from the consciousness, self-deception enables unconscious pursuit of self-interests without having to lower one's moral self-evaluation. However, lowering moral self-concept allows conscious pursuit of self-interests and thus makes self-deception unnecessary.

There are several limitations of this study. First, questionnaire measures of self-deception can only tap the construct as an intrapersonal variable representing part of the self-system, whereas a complete investigation of self-deception should also address its adaptive functionality as an interpersonal strategy. Second, the validity of the self-response method in measuring self-deception is still open for debate even though it is considered valid within the theoretical framework we employed to investigate self-deception. Third, helping intention as measured by our hypothetical scenarios may not fully approximate altruistic behavior; thus, future research should examine real helping behavior. However, we did not intend to measure pure helping intention. Instead, we focused on the contrast between helping with and without potential self-benefit, and there is no reason to believe that the potential difference between people's self-reported helping behavior and real-world helping behavior would depend on the presence or absence of self-benefit. Fourth, the correlational nature of this study precludes cause and effect conclusions. Future research investigating self-deception as an interpersonal strategy would benefit from controlled experimental manipulation of the relevant variables. Finally, there are alternative conceptions of self-deception. Two alternative explanations focus on the massive modularity of the mind where self-deception results either from encapsulated cognitive systems that do not communicate with one another (Kurzban & Akipis, 2007; Kurzban, 2010, 2011) or from different functional motivational systems that operate independently with separate goals (Kenrick & White, 2011). Because these revolutionary views

do not acknowledge the working of a “central self” (von Hippel & Trivers, 2011) that has a conscious motivation (Mele, 1997) to pursue fitness-enhancing goals, self-deception is also not viewed as an adaptation. Our study that is framed within the “central self” view of how the mind works is thus limited either in accounting for or rejecting these alternative views of self-deception. Despite these limitations, this study is among the first to construe and empirically investigate intrapersonal self-deception as part of the self-system in relation to moral self-concept and self-consciousness. The findings should advance our understanding of self-deception, especially when viewed from an evolutionary perspective.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage Publications.
- Alexander, R. D. (1987). *The biology of moral systems*. New York: Aldine.
- Aquino, K., & Reed, A. (2002). The self-importance of moral identity. *Journal of Personality and Social Psychology*, 83, 1423–1440.
- Batson, C. D., Kobryniewicz, D., Dinnerstein, J. L., Kampf, H. C., & Wilson, A. D. (1997). In a very different voice: Unmasking moral hypocrisy. *Journal of Personality and Social Psychology*, 72, 1335–1348.
- Cosmides, L., & Tooby, J. (2005). Neurocognitive adaptations designed for social exchange. In D. M. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 584–627). Hoboken, NJ: Wiley.
- Cummins, D. D. (1999). Cheater detection is modified by social rank: The impact of dominance on the evolution of cognitive functions. *Evolution and Human Behavior*, 20, 229–248.
- Davidson, D. (1985). Deception and division. In E. LePore & B. P. McLaughlin (Eds.), *Actions and events: Perspectives on the philosophy of Donald Davidson* (pp. 138–148). Oxford, England: Blackwell.
- Demos, R. (1960). Lying to oneself. *The Journal of Philosophy*, 57, 588–595.
- Echebarria, A., & Valencia, J. F. (1994). Private self-consciousness as moderator of the importance of attitude and subjective norm: The prediction of voting. *European Journal of Social Psychology*, 24, 285–293.
- Epley, N., & Dunning, D. (2000). Feeling “holier than thou”: Are self-serving assessments produced by errors in self- or social prediction? *Journal of Personality and Social Psychology*, 79, 861–875.
- Fenigstein, A., Scheier, M. F., & Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology*, 43, 522–527.
- Fingarette, H. (1969). *Self-deception*. New York: Humanities Press.
- Greenwald, A. G. (1980). The totalitarian ego: Fabrication and revision of personal history. *American Psychologist*, 35, 603–618.
- Greenwald, A. G. (1988). Self-knowledge and self-deception. In J. S. Lockard & D. L. Paulhus (Eds.), *Self-deception: An adaptive mechanism?* (pp. 113–131). Englewood Cliffs, NJ: Prentice-Hall.
- Keller, M., Edelstein, W., Krettenauer, T., Fu-xi, F., & Ge, F. (2005). Reasoning about moral obligations and interpersonal responsibilities in different cultural contexts. In W. Edelstein & G. Nunner-Winkler (Eds.), *Morality in context* (pp. 317–337). Amsterdam: Elsevier.
- Kenrick, D. T., & White, A. E. (2011). A single self-deceived or several subselves divided? *Behavioral and Brain Sciences*, 34, 29–30.
- Krebs, D. (1998). The evolution of moral behaviors. In C. Crawford & D. L. Krebs (Eds.), *Handbook of evolutionary psychology: Ideas, issues, and applications* (pp. 337–368). Mahwah, NJ: Lawrence Erlbaum Associates.
- Kurzban, R. (2010). *Why everyone (else) is a hypocrite*. Princeton, NJ: Princeton University Press.
- Kurzban, R. (2011). The problems with “self-deception”: No “self” and no “deception”. *Behavioral and Brain Sciences*, 34, 32–33.
- Kurzban, R., & Aktipis, C. A. (2007). Modularity and the social mind. *Personality and Social Psychology Review*, 11, 131–149.
- Markus, H., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. *Annual Review of Psychology*, 38, 299–337.
- Mele, A. R. (1997). Real self-deception. *Behavioral and Brain Sciences*, 20, 91–102.
- Mitchell, J. (2000). Living a lie: Self-deception, habit, and social roles. *Human Studies*, 23, 145–156.
- Mitchell, R. W. (1986). A framework for discussing deception. In R. W. Mitchell & N. S. Thompson (Eds.), *Deception, perspectives on human and nonhuman deceit* (pp. 3–40). Albany: State University of New York Press.
- Nesse, R., & Lloyd, A. (1992). The evolution of psychodynamic mechanisms. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind* (pp. 601–624). New York: Oxford University Press.
- Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 17–59). New York: Academic Press.
- Paulhus, D. L., & John, O. P. (1998). Egoistic and moralistic biases in self-perception: The interplay of self-deceptive styles with basic traits and motives. *Journal of Personality*, 66, 1025–1060.
- Paulhus, D. L., & Reid, D. B. (1991). Enhancement and denial in socially desirable responding. *Journal of Personality and Social Psychology*, 60, 307–317.
- Sackeim, H. A. (1983). Self-deception, self-esteem, and depression: The adaptive value of lying to oneself. In J. Masling (Ed.), *Empirical studies of psychoanalytical theories* (pp. 101–157). Hillsdale, NJ: Analytic Press.
- Scheier, M. F., & Carver, C. S. (1985). The self-consciousness scale: A revised version for use with general populations. *Journal of Applied Social Psychology*, 15, 687–699.
- Sedikides, C., & Skowronski, J. (1997). The symbolic self in evolutionary context. *Personality and Social Psychology Review*, 1, 80–102.
- Stake, J. E. (1994). Development and validation of the Six-Factor Self-Concept Scale for adults. *Educational and Psychological Measurement*, 54, 56–72.
- Surbey, M. K. (2004). Self-deception: Helping and hindering public and personal decision making. In C. Crawford & C. Salmon (Eds.), *Evolutionary psychology, public policy and personal decisions* (pp. 117–144). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
- Surbey, M. K. (2011). Adaptive significance of low levels of self-deception and cooperation in depression. *Evolution and Human Behavior*, 32, 29–40.
- Surbey, M. K., & McNally, J. J. (1997). Self-deception as a mediator of cooperation and defection in varying social contexts described in the iterated prisoner’s dilemma. *Evolution and Human Behavior*, 18, 417–435.
- Trivers, R. (1976). Preface. In R. Dawkins (Ed.), *The selfish gene*. Oxford: Oxford University Press.
- Trivers, R. (1985). *Social evolution*. Menlo Park, CA: Benjamin/Cummings (pp. 395–420).
- Trivers, R. (2000). The elements of a scientific theory of self-deception. *Annals of the New York Academy of Sciences*, 907, 114–131.
- von Hippel, W., & Trivers, R. (2011). The evolution and psychology of self-deception. *Behavioral and Brain Sciences*, 34, 1–16.